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SURGICAL TREATMENT OF RETINAL DETACHMENT.*

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The treatment of retinal detachment is probably the most discouraging of all conditions which the ophthalmologist meets in his practice. So many procedures, both medical and surgical, have been advanced, only later to be discarded as of no value, that the profession at large has looked upon the condition as a hopeless, incurable one. Only perfunctory treatment, if any, has been given to the majority of these cases which are of such serious import to the vision of the patient.

Vail of Cincinnati in a most comprehensive paper published in the Annals of Ophthalmology, 1913, bears quotation in this connection. His paper was based on replies received from 281 oculists, 250 representing, according to the author's estimate, an average of twenty years practice, and an experience averaging five cases a year, or about 25,000 cases in all, with the employment of every known line of treatment "and not a single case of permanent cure in the lot." On the other hand, thirty-one oculists secured cures; twenty-five each had a single cure; four secured two cures, and two, four cures, making in all forty one patients reported as cured. Two of these patients had detachments due to albuminuria in pregnancy and they were cured after abortion. They should not be counted, as treatment is not applicable except in these unusual circumstances. This leaves thirty-nine cures. In about one-half of this number the cure is not convincing from the records submitted, leaving say twenty cases, or less than one case in every 1,000 cases as a possible cure. Vail, considers that these figures show conclusively that there is no proper treatment for this condition.

Medical treatment involved rest in bed, pilocarpin sweats, subconjunctival injections of citrate of soda, according to the method of Fischer, or subconjunctival injections of other drugs, as salines, dionin, mercury, etc. All these measures have been abandoned by the progressive oculist and whatever hope can be had for a re-attachment is based upon surgical operation. However, it is always wise for the ophthalmologist to investigate the general condition of his patient, paying particular attention to the blood, urine and toxic elements which cause detachments by setting up a serous choroiditis. This, in the author's opinion, explains many so-called cases of idiopathic detachments and probably some of those due to the myopia, a condition wherein which detachment is common and only awaits an exciting cause. Retinal detachment has been reported due to pyorrhea alveolaris, to diseased tonsils and sinus involvment, also to intestinal toxemia, probably due to toxins floating in the blood or lymph that exercise a selective action on the choroid causing an exudation of serum with resulting detachment of the retina. The removal of this sub-retinal fluid and the adhesion of the area of the detachment to the choroid is the end that is sought and that seems only possible through surgical intervention.

The first rational operation for retinal detachment was a simple puncture of the sclera, which, according to Casey Wood, was first practiced by James Ware in 1805, and it was probably the favorite operation of the majority of eye surgeons until the introduction of scleral trephining. This operation aimed simply at the evacuation of the sub-retinal fluid. In 1863 von Graefe practiced an incision of the detached retina so as to allow the fluid to escape more freely. This was also done by Bowman. Later de Wecker devised a trocar to be used in tapping the sub-retinal sac; and Galezowski aspirated or suggested aspiration of the postretinal fluid with a modified Dieulafol syringe. In 1871 Meyer endeavored to pass a suture through the retina and drew it fast to the sclera. In 1882 de Wecker and Masselon employed a galvanocautery, which was thrust completely through the sclera. This form of treatment was intended to bring about an adhesive inflammation between the choroid and the replaced retina. In 1886 Fano proposed that an irritant fluid be injected into the sac to set up an adhesive inflammation and in 1890 Scholer reported twenty-six cases in which he had made injections of a few drops of iodin into the posterior chamber. In 1895 Deutschmann proposed

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his bisection operation, which was intended to apply to acute cases as well as to those more advanced in which a certain amount of permanent shrinkage of the retina had taken place. This operation evacuates the sub-retinal fluid, divides the retina and allows it to fall back, and, acording to the author, produces small inflammatory or exudative adhesions between the choroid and retina. He further injected animal vitreous into the vitreous cavity, so as to press the retina back into place. In 1903 Muller advocated resection of a portion of the scleral wall, so as to secure permanent drainage.

Holth, at the 27th meeting of the Ophthalmological Society in 1913, reported six cases of retinal detachment in which the sclera was trephined without evacuating the sub-retinal fluid. He reported a temporary favorable effect in all, and a permanent favorable effect in four instances. Holth credits the technic of the operation to Argyll-Robertson in 1874, although he says it was done at that time for glaucoma absolutum. Holth used a two and one-half millimeter trephine, and raised a flap of conjunctiva and episcleral tissue, after which a scleral button was removed and the flap sutured into place without injuring the choroid.

In 1913, Holth reported further that he had observed the eyes already operated on and had performed the same operation on a number of other eyes. In eleven cases in which retinal rents existed, no permanent improvement was secured, but in five cases where there were retinal rents, the retina became completely re-attached. In Holth's opinion the prognosis is most favorable in the flat detachments where a tear most readily can be excluded.

Walter R. Parker reported a successful case. He trephined the sclera and incised the choroid and retina. "The operation was followed by a free discharge of a straw colored fluid and a small amount of vitreous." It must, however, be stated that in this case a double neuro-retinitis existed, and it is possible, when an inflammatory condition of this nature exists, that the type of case is not so serious as in the ordinary spontaneous detachment. At the June meeting of the American Medical Association, Parker reported eleven cases, with three very good results. The histories are given in detail, and the results are summarized as follows: Vision improved, four; unimproved, five; made worse, two. Fields improved, eight; made worse three. Parker almost invariably incises the choroid, or the choroid and retina, with a cataract knife, allowing a few drops of vitreous to escape.

Dr. Edgar S. Thomson, with whom the author has been associated in hospital work for many years, has collaborated in a series of cases covering a period of five years. We employed for the medical treatment of retinal detachment rest in bed, recumbent position for weeks in conjunction with diaphoresis by pilocarpin injections; subconjunctival injections of citrate of soda, saline, dionin, cyanide of mercury, but without results of value. Scleral puncture also was resorted to, twice with temporary relief. Later, in two cases, aspiration of the sub-retinal fluid without trephine opening was performed but this was quickly abandoned on account of the traumatism produced on the eyeball in pushing the needle through the tough, resilient, unyielding sclera.

In September of 1914, Dr. Edgar S. Thomson and I conceived of the trephining operation with a simultaneous or subsequent aspiration of the sub-retinal fluid. The idea was to secure drainage over a prolonged period of time, and to remove the fluid with as little traumatism as possible, so as to avoid having any inflammatory tissue around the scleral opening which might subsequently block it up. It is, of course, not definitely known whether a trephine opening will remain free indefinitely or not, but, according to Elliot's experience in trephining for glaucoma, the evidence seems to indicate that the opening will remain free for months, perhaps even for years, and as far as the treatment for detachment is concerned, this has its obvious advantage.

The technic followed in thirteen instances, as reported by us at the meeting of the American Medical Association, 1915, was practically the same as Holth's, as far as the removal of the scleral button is concerned. Holth, however, considers that it is proper at times to enlarge the scleral opening with scissors. We do not interfere with the scleral opening in any way whatsoever, for the reasons already given. A scleral button is removed with the slightest possible traumatism, as nearly over the center of the detachment as possible. If suprachoroidal fluid escapes in any great quantity, and the ophthalmoscope shows that the detachment has gone down, the conjunctival flap is replaced and nothing further is done for the time being. If little suprachoroidal fluid escapes, the needle of an aspirating syringe is carefully pushed through the choroid and as much fluid as possible is aspirated. The conjunctival flap is then sutured into place and the operation terminated. If no aspiration has been done at the time of the trephine operation, it is done about ten days later when the reaction has completely subsided. A small aspirating needle is passed through the conjunctiva, the scleral opening and choroid and

as much of the fluid as possible is withdrawn. This operation can be repeated if necessary, as it is followed by almost no reaction, and, as before stated, it accomplishes the removal of the fluid with the least possible traumatism of the choroid in the trephine opening. We feel that any escape of the vitreous, or wounding of the retina, is undesirable, as such a condition must certainly lead to adhesions and more or less blocking up of the permanent filtration.

The trephine opening should be made over the site of the detachment and as far back as possible on the globe, consistent with a good working field. Most detachments are found in the lower field, although we have operated on some in the upper quadrant.

Frequently a detachment in the upper part of the field will subside, leaving the retina over the site of the old detachment apparently re-attached, and the fluid will gravitate to the most dependent position—the lower part of the eyeball. It seems wiser, therefore, to select as the site of the operation, the most dependent position possible which is within the area of the detachment, and this will usually be a point equidistant from the external and the inferior recti muscles, or a corresponding point between the internal and inferior recti. The trephine opening should be made as far back as possible, and this is more easily accomplished when the operation can be done between the external and the inferior rectimuscles than on the opposite side. No speculum is necessary. An assistant inserts a strabismus hook and retracts the lower lid and tissues of the external canthus. A curved incision is made through the conjunctiva, the convexity in the direction of the cornea, and the tissues are taken up down to the sclera. It is wiser at this juncture to put a single silk suture at the summit of the flap, as otherwise the capsular tissue underneath the flap is apt to be rolled up and the ultimate flap will then be composed of nothing but conjunctiva, leaving more or less thickening and adhesions in the episcleral tissues, which tend to seal up the trephine opening. The entire thickness of tissues is taken up down as far as the sclera, and dissected well back. The assistant then holds this flap back by means of the suture. The trephine opening is then made with a 2 or 3 mm. trephine (a special trephine). On the removal of the trephine button, there is in many instances, a gush of serous fiuid from the suprachoroidal space. Examination of the eye usually shows considerable subsidence of the detachment after this fluid has escaped. The flap is then sutured into place, the eye bandaged and the patient put to bed.

The pupil should be well dilated with atropin before the operation, both for the purpose of examination and to keep it as free as possible from the tendency to inflammation. There is usually very slight reaction after the trephine operation. The sub-retinal fluid is then forcibly aspirated (Record Syringe), after which the patient is put to bed for a day or two as circumstances require. The aspiration operation is followed by practically no reaction and can be repeated as long as the trephine opening remains free. In this connection, it is very important that the flap be properly made, as, if the capsular tags are allowed to roll under the flap, it is difficult to see where the opening lies. If the conjunctival flap heals properly, the trephine opening shows as a small dark spot, which is easily identified. It does not, however, show so plainly as a trephine opening at the corneal margin, on account of the greater thickness of the conjunctival and capsular tissues of the flap. In some cases presented, a single aspiration was sufficient, but in others there was re-accumulation of the fluid and the aspiration was repeated.

It is evident that this procedure, in order to be successful, must be undertaken before the detachment is old enough to have undergone degenerative changes. A shrunken and contracted retina will, of course, not fall back into position, even if the fluid be withdrawn; nor is there any probability of success if inflammatory changes have set in, especially if the intra-ocular tension has fallen below normal.

It is, also, hardly conceivable that the operation would be successful in a high degree of myopia, although on this point experience is lacking. The indication for the operation, however, is in recent traumatic or spontaneous detachments where there seems a liklihood that the fluid accumulation serves to continue the condition.

Report of Cases.

Case 1. B. a bookkeeper, aged 21 years. Family history negative. September 22, 1914, he noticed a blurring in the sight of the left eye. Sept. 26 he visited a hospital but did not receive any treatment. He visited me, October 1st. There was no history of any trauma. Urinanalysis, Wassermann test and von Pirquet test negative. Blood pressure 128. R. V., 20/40. L. V., hand movements in the lower and outer fields. There was low myopia in each eye. The retina was bluish white and thrown into folds with loss of the light reflex of the vessels. The disc was still visible, but the detachment extended nearly to the macular region. There were a few floating opacities in the vitreous. He entered the Manhattan Eye, Ear and Throat Hospital, Oct. 2nd, and was put to bed, pupil dilated with atropin, and pressure bandage applied. Pilocarpin sweats were given every second day. Oct. 12, no

improvement being apparent, I operated. Under cocaine, a scleral button 2 mm. in diameter, was removed by the trephine and from under a conjunctival flap over the site of the detachment and as far back as possible between the inferior and external recti muscles. The choroid and retina were not punctured. The conjunctival flap was united by two silk sutures and a moderate pressure bandage applied. He continued in bed until Oct. 22nd, having had but a moderate amount of reaction. On that date, a medium-sized aspirating syringe was pushed through the conjunctiva and scleral opening and choroid, and 25 minims of serous fluid was withdrawn. The fundus of the eye was immediately examined and the retina was seen to have fallen back into place. The vision on the following day was "fingers at 8 feet." The vision gradually increased, on Dec. 22nd vision in the left eye was 20/30. January 27th, 1916, the left lens was increased to a minus 1.50 cyl. which gave him vision of 20/20. This case was shown before the Academy of Medicine, first shortly after the operation, again at the end of one year and again at the end of two years. I saw him about one month ago and his vision still remains 20/20 with correction.

Case No. 2. Mr. W. B., age 62 years, by occupation a clerk in the Assay office of the U. S. Mint. For a time he tells me he was exposed to intense heat in the melting of gold in the crucibles.

He first came to my office on Sept. 14th, 1916, and gave the following history: He had lost the vision of his left eye six years before from a condition which he was told was retinal detachment. The condition was rather acute, the vision being lost within a period of a few months. The vision in his right eye remained good until the early part of July, 1916, when it suddenly failed. As he described it, a film came in front of the eye, more markedly above and to the nasal side. He had been examined for glasses about a month previously by an optometrist and was told that the vision in this eye was normal. He was under treatment from July until Sept. 4th by the use of medicine and drops, but his vision gradually failed so that he had to be led into my office on September 14; his vision being fingers at two feet in the lower field with correction on. Vision in the left eye was light perception in the lower and outer fields.

Family history excellent. His personal history was that he had never been seriously ill in his life. He smokes moderately; has never used alcohol. Teeth normal. Stomach and bowels normal. A series of urine examinations shows his urine to be of low specific gravity with traces of albumin and occasional granular and hyaline casts although in some specimens none were found. A urine typical of a chronic interstitial nephritis. Wassermann test was negative. Blood pressure, systolic 180. Diastolic 110.

He was treated by subconjunctival injections of 2% sodium citrate with instillations of atropin and dionin in the eye, rest in bed and a moderate pressure bandage without any good result.

An ophthalmoscopic examination of the eye showed a flat detachment of the entire lower portion of the fundus with some floating bodies in the vitreous. Disc looked paler than normal, vessels, both arteries and veins more contracted. Fields could not be taken.

On Oct. 7th, he was operated on at the Manhattan Eye, Ear and Throat Hospital. The usual scleral button being removed with immediate aspiration, 15 minims of clear yellowish fluid was removed. Oct. 8th, the patient remarked that his vision had improved wonderfully and a few days later he was able to see through the door of his room out into the hall and could count fingers at 8 feet.

Examination of the fundus showed a re-attachment of the retina and the tension of the eye, which, following the operation was markedly minus, gradually increased until it was normal on Oct. 30th when he left the hospital. His vision then being 20/200 without correction and with a plus 2.50 cyl. ax. 90 was 20/100 plus 1. He could read a Jaeger No. 10 with a plus 2.00 sph. added to his distance correction.

The condition to-day is absolute re-attachment of the retina, still considerable floating opacities in the vitreous which probably accounts for the low vision. Fields are moderately contracted both for white and colors.

In all about 70 patients have been operated upon by this method. The most of them suffered from long standing and nearly complete detachment and no result from the operation was expected. Some gave early promise of complete cure, only to redetach later. Many were benefited as to field and vision, although the sub-retinal fluid could not be entirely withdrawn. Vitreous hemorrhage occurred once following a secondary aspiration. probably as a result of opening a choroidal vessel.

This, however, was the only instance in which this complication occurred. Not a single eye had to be enucleated as the result of the operation, so that we regard the operation as entirely safe, with reference to the integrity of the eyeball. Six patients are regarded as cured, having given evidence of the fulfillment of the three requirements: 1. complete reattachment; 2 restoration of vision and fields; 3. with a duration of one year. My first patient operated upon in October, 1914, has 20/40 without correction brought up with lenses to 20/20 with normal fields for white and colors.

In conclusion, to quote the words of Roemer; "The treatment of detachment of the retina is one of the most thankless and unsatisfactory duties we have to perform in ophthalmology." Taking into consideration the statistics compiled by Vail, the results obtained by this new operative procedure of scleral trephining with aspiration, show an encouraging increase over those secured by any of the older methods. As we feel that there is no danger as to the loss of the eye itself, and as in

none of our cases has the vision been lowered, we would urge the adoption of the procedure, particularly when small or moderate detachments are found early and when all of the sub-retinal fluid can be removed. We would also urge upon the profession an investigation into the etiological factor and the proper medical treatment to be instituted in conjunction with the operation.

391 EAST 149TH STREET.

A CASE OF SPONTANEOUS CURE OF FEMORAL ANEURYSM.

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The femoral artery courses down the anterior aspect of the thigh, its origin being immediately behind Poupart's ligament and midway between the anterior superior spine of the ilium and the symphysis pubis. It is covered by the skin and superficial fascia, superficial inguinal lymphatic glands and iliac portion of the transversalis fascia, which forms the anterior part of the sheath of the vessel. Posteriorly it lies upon the psoas muscle, which separates it from the capsular ligament of the head of the hip-joint. This artery is two inches in length and may be readily located by the palpating finger.

By virtue of its superficial position, injury to the femoral artery is not infrequent.

Le Dentu, A. and Delbert, Pierre, Traite de chirurgie clinique et operatoire. Paris, 1897, on page 234, in discussion of femoral aneurysm, say: "These aneurysms, like all others, increase progressively in size and tend towards rupture, but their progress is, perhaps, less rapid than that of popliteal aneurysm and cases of spontaneous recovery have been observed. But this is too rare an occurrence to be taken into account in considering the prognosis. Though these aneurysms are not so serious as those of the popliteal space it is no less true that they should be treated as soon as they are recognized."

Joseph D. and Buck, Albert H. American Practice of Surgery, New York, 1910, state "In the early stages, while the sac is small, the contents consist of fluid blood only. Later, when the sac increases in size, particularly in the sacculated variety, layers of fibrin are deposited upon the walls, the outer and older layers being dry, firm and yellowish-white in color, the inner and younger soft, friable and red. Nature rarely makes an effort to organize this clot, neither living cells nor vessels being present; the tendency is rather toward degeneration. In the outermost layers granular and fatty changes are found, and often irregular cavities, filled with atheromatous material.

The artery from which a true aneurysm springs is generally the seat of chronic arthritis. The collateral arteries are dilated in proportion to the obstruction offered to the blood current in the main vessel. The satellite veins are compressed and sometimes thrombosed.

A spontaneous cure is extremely rare. It may be due to gradual filling of the sac with layers of fibrin; to coagulation of blood within the sac, the result of lodgment of an embolus above or below the mouth, this embolus being perhaps derived from the an-

Fig. 1.—Location of aneurysm, anterior aspect of the right thigh.

eurysm; to the inflammation of the sac; or to rupture and subsequent cicatrization. An aneurysm cured by nature shrinks somewhat and becomes solid and may in time be represented by a mass of fibrous tissue. Preservation of the lumen of the artery, which is possible in the spontaneous cure of a saccular aneurysm, is rare."

In the American Text Book of Surgery; William W. Kean and J. William White, Philadelphia, 1892, the following is found:

"The spontaneous cure of aneuryism is occasionally effected by nature, unaided by the surgeon. Such a case occurs very seldom, but that a cure under certain conditions may thus be brought about is no longer open to dispute. In the cases of spontaneous cure the aneurysm has always been found solid and firm—which leads to the belief that a deposition of fibrin has already taken place. A deposition of fibrin takes place in consequence of the slower current in the sac and finally fills it. The

clot thus formed within the sac may extend into the vessel and thus add to the permanence of the cure. Occasionally the aneurysm is spontaneously cured by an embolus, when a clot is washed out of the sac into the efferent artery and occludes it, so that the current is completely arrested within the sac; the latter then fills with a firm coagulum. Sometimes a spontaneous cure is effected when the sac becomes large enough by its own weight to cause mechanical pressure upon the artery sufficient to retard, or even to arrest, the circulation in the vessel. Finally, a spontaneous cure is effected in some cases when the sac becomes acutely inflamed and the coagulation of the blood within it is thereby promoted."

Fig. 2.—X-Ray View.

Charters J. Traumatic and Arterio-venous aneurysms. Lancet, 1917, I, 576-577.

At a meeting of the Medical Society of London in a discussion of aneurysms Col. Symonds said, "that gangrene was a serious danger in operating on the common femoral; in the South African war it occured in 50 per cent according to Makins. In aneurysms below the middle of Hunter's canal his experience was that gangrene did not follow ligature of the vessels. With regard to arterio-venous aneurysms Sir George Makins was strongly of the opinion that these should be left for two or three months to consolidate and contract and to permit the establishment of a collateral circulation. But Col. Symonds thought it wiser to operate on them early, thus avoiding the trouble due to adhesions which followed passive waiting.

Maj. W. McAdam Eccles thought that in aneurysm of the neck the sooner one operated the better; but when the situation was one of the limbs it was right to wait for collateral circulation to be established. So far he had not had a case of gangrene of the lower limbs because he had waited for months in these cases.

Capt. J. R. Lee agreed as to the wisdom of waiting in aneurysm of the limbs. He did not agree with leaving the sac, as there was evidence that it was apt to become canalized."

Cure by digital compression—Case I. Sawtelle, Henry W. Femoral Aneurysm beginning immediately under Poupart's ligament treated by digital compression, N. Y. Med. Jour., 1895, lxi, 225-227.

Patient, sailor, 28; aneurysm first made its appearance after a hard night's work at the wheel in

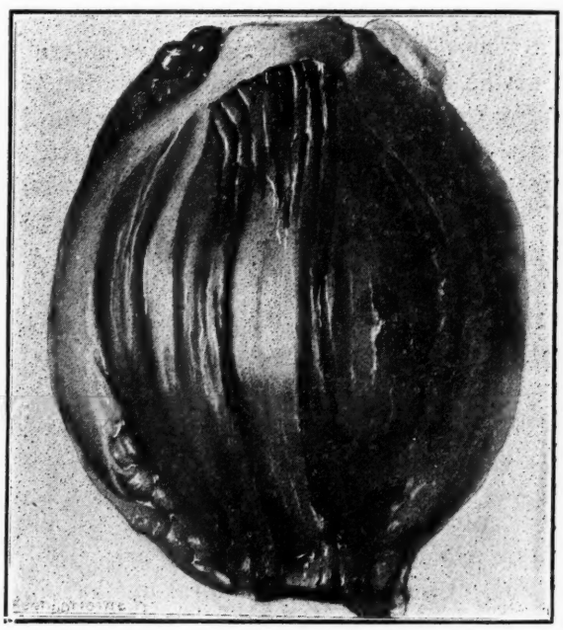

Fig. 3.—Anterior view of the removal aneurysm, fibers of the sartorius crossing from above downward anteriorly.

a heavy sea about 16 months before he came for treatment. While at the wheel he had to stand in such a position that he had to brace himself with his left leg, subjecting it to considerable strain. Digital compression was applied and after two hours pulsation stopped in the tumor, but compression was kept up for 41 hours longer. Oct. 27th, after three weeks in bed, allowed to get up, discharged Oct. 29th, at which time the tumor was found about half its former size and the clot appeared to be thoroughly organized. No pulsation of femoral, popliteal or tibial arteries could be detected, but the collateral circulation was thoroughly established, as evidenced by the warmth and absence of edema and full usefulness of the limb.

Case II. Hard, A. D. An interesting case of femoral aneurysm cured by digital compression. Phys. and Surg., Ann Arbor, Mich., 1883, v. 494.

Capt. W., 38; well marked aneurysmal tumor of femoral region extending from inguinal furrow to within four inches of knee. History of severe wrench of thigh three years previously while march-

ing, which was attended by sharp, stitchy pain in right groin and followed by throbbing lump about size of chestnut, which has steadily increased in size. Digital compression for 60 hours; followed by tourniquet for 36 hours. During this time tumor decreased in size about one-third, pulsation had completely ceased and the solidity of it resembled a fibroma. Subcutaneous injections of ergotin, three grains to an ounce, were given very three hours, for the purpose of delaying complete collateral circulation, and so favoring clot formation in the aneurysmal sac; notwithstanding this compression below the tumor was necessary during the last 24 hours.

Case III. Mac Cormac, W. Aneurysm of the Femoral Artery in Hunter's Canal; Digital compression for 24 hours; cure. Lancet, 1883, I. 405.

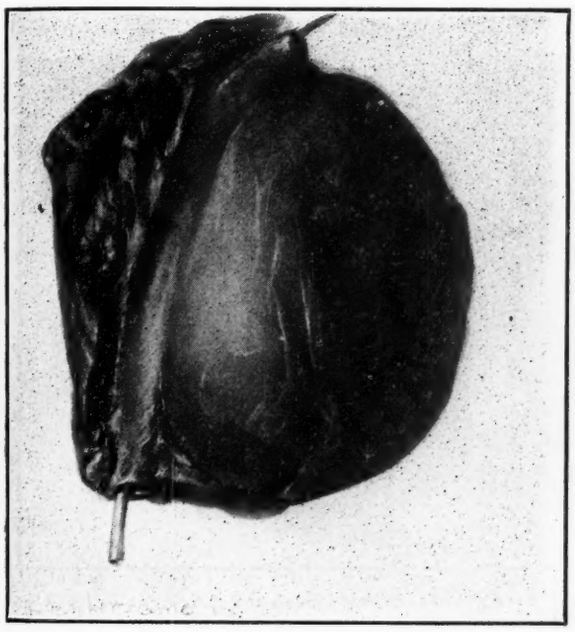

Fig. 4.—Posterior view of the aneurysm, probe in the afferent and efferent stems.

China packer, 29; admitted Dec. 5, 1882. In 1874, chancre followed by rash. About year before admission health gave way and he was advised to go to bed for heart disease; had been in bed since. About month before admission noticed small pulsating swelling in lower part of left thigh. On examination tumor found in lower third of Hunter's canal; distensile pulsation well marked; well marked bruit conducted down to calf. Leg warm and pulsation of posterior tibial could be felt. Arteries thickened; pulse 89, collapsing. Put to bed on low diet for a few days and pulse fell to 80. Digital compression maintained by relays of students. Compression begun at 8:30 A. M., Dec. 12th. At midnight sac nearly filled with clot and the pulsation considerably diminished. Still some pulsation to be felt in posterior tibial. Next day at 10 A. M. tumor quite solid; no pulsation in sac or tibial artery; limb warm. Compression discontinued. Patient felt well. Several anastomosing vessels visibly pulsated around knee. On 16th patient well, limb warm; no return of pulsation in tumor which was much more solid. 21st. Pulsation could be felt for first time in posterior tibial; no return in sac. Patient got up Jan. 5th. The sac had contracted to one-third its former size, became quite hard and gave the patient no inconvenience.

Cure by Pressure—Brown, Buckminster. Femoral Aneurysm cured by direct compression while the patient was taking active exercise; death from peritonitis 6 years afterwards. Bost. Medical and Surgical Journal, 1875, xciii, 461-469.

Man 38; for 10 days had noticed throbbing in right groin, which was found to be femoral aneurysm. (Cause not given). Aneurysm fusiform and involved all coats of artery. Situated just beneath Poupart's ligament. Describes detail of pressure treatment, at first with bags of shot and cannon balls, later with a leather belt with a strap at-

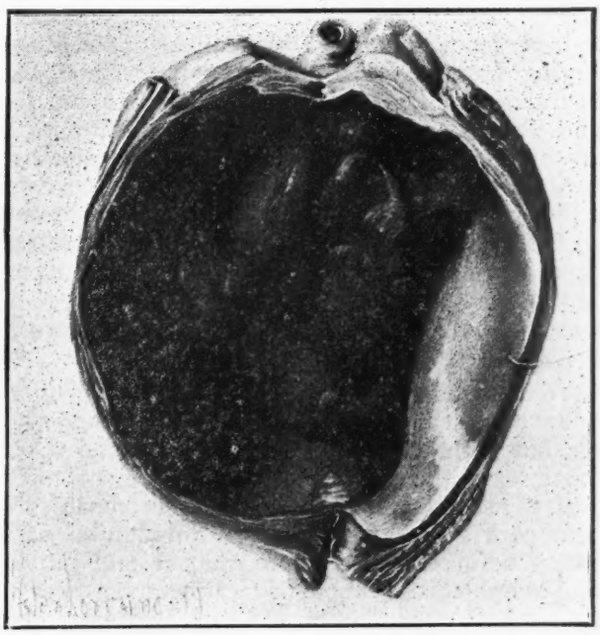

Fig. 5.—Sac opened up shows concentric laminations of fibrin deposit.

tached passing over the aneurysm. The patient was on his back ten months and under treatment between sixteen and seventeen months. Died six years later of peritonitis which had no connection with aneurysm. On autopsy a colored wax injection was thrown into the common iliac artery. There is an illustrative plate which shows that it entered the thigh by the internal iliac artery, its branches and their anastomoses. The aneurysm was found to be fusiform and caused by a gradual expansion of the common and superficial femoral arteries, commencing directly under Poupart's ligament and increasing until its diameter measured two inches; it then gradually diminished until its caliber corresponded with that of the superficial femoral, the long axis of the tumor measuring 2½ inches. The three coats of the artery could not be satisfactorily demonstrated owing to their consolidation by the long continued compression. The cavity was completely filled by a mass of clot, somewhat adherent to, but easily separated from its walls. It showed no appearance of lamination on section, but instead a firmly condensed tissue irregularly distributed

throughout the friable portion, and inclosing the latter in small cavities. The former predominated and under microscope showed some signs of organization. The communication between the ends of the aneurysm and the artery was entirely closed. There was no communication between the aneurysm and the deep femoral. The femoral vein had been completely closed. The first half inch of the external iliac artery was filled with the injecting material; beyond that point the vessel had dwindled to the usual size of the circumflex iliac; found that fine probe passed downward for about half inch; below that it was apparently solid. The superficial femoral was empty, and a probe entered five inches below the aneurysm passed readily to within an inch of the latter, but there it met a solid body (the occluded vessel) and would not enter the aneurysm. The internal iliac and its anastomosing branches were very much enlarged, the caliber of the vessels varying from twice to three or four times their natural size. The main blood supply to the limb came from the gluteal, sciatic and obturator arteries. Gives anatomical details of the anastomoses. During life the patient has at times had intense pain in the sciatic nerve, and this was explained by finding the nutrient vessels of the nerve very much enlarged.

Cure by Tourniquet—Beach W. A. A. Case of Femoral Aneurysm cured without operation. Medical Recorder, 1824, vii, 53-54.

Woman of 50 had very large femoral aneurysm. Below the knee along the course of the artery there was but little circulation, which produced a continual sensation of numbness. The tumor looked as if it would soon burst; it was accompanied by great pain and fever. Advised amputation which patient refused. Applied tourniquet and pursued rigid antiphlogistic course of treatment, both general and local. Cupped tumor and extracted some blood from below the knee; about 10 oz. The whole leg was bathed in salt water and covered with bruised stramonium leaves. In about six weeks patient was able to walk and soon after took up her usual work. Is now in good health. The author is confident that the aneurysmal sac was filled with coagulated blood, and that the circulation had stopped, being carried on subsequently by the anastomosing branches. Thinks an operation would unquestionably have proved fatal.

No information given as to the cause of the aneurysm.

Cure by Ligation of External Iliac—Cooper, Sir Astley. Case of Femoral Aneurysm for which the External Ilac Artery was Tied. Guy's Hosp. Reports, 1836, I, 43-50.

This is a case of ligation. The patient died 18½ years after the operation.

Spontaneous Cure—Case I. Holmes, T. On the Surgical Treatment of Aneurysm in its Various Forms. Lancet, 1874, ii, 37; 74; 297; 336; 507; 543; 825; 859. The lectures on pp. 336 and 507 are on femoral aneurysm, and a number of cases are quoted from the literature showing spontaneous recovery or recovery under compression; but the state of the circulation is not described. In one case of Beaumont's abstracted from the Medical Times and Gaz. of July 17, 1867, a case of traumatic femoral arterio-venous aneurysm, he says that the sac was ossified and that the femoral vein was so filled with coagula that the profunda vein became so compressed as hardly to transmit any blood, the anastomosing veins, with the saphena, had so completely carried on the circulation that there was not only no gangrene, but no edema of the limb.

Case II. Crisp, Edwards. A Treatise on the Structure, Disease and Injuries of the Blood Vessels. Lond., 1874. Gives a table of 551 cases of aneurysm collected from the literature. Of these only one (that of Mr. E. Home) was spontaneous recovery of a femoral aneurysm.

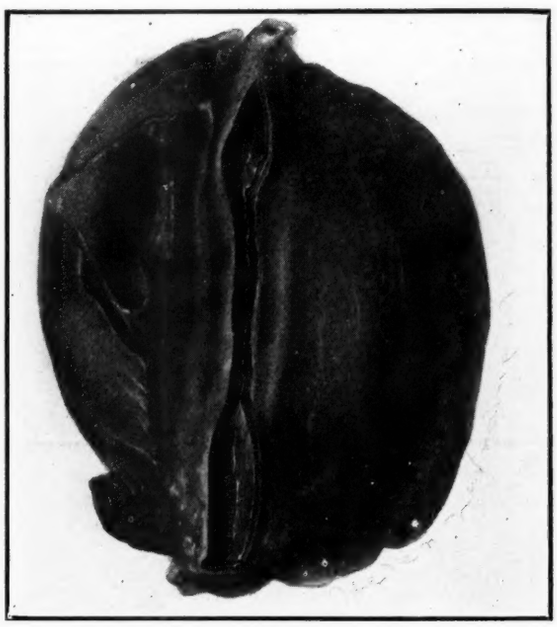

Fig. 6.—Complete olbiteration of the artery for the middle one-half of its extent between the upper and lower pole of the aneurysm.

Case III. Luke, J. A case of Tubular Aneurysm undergoing Spontaneous Cure. Medical Gazette, 1845, L, 78-82.

Dock laborer, 31; had oblong pulsating tumor of thigh extending from Poupart's ligament down the thigh between three and four inches in the direction and situation of the femoral artery. Had first noticed it about a year before. Thinks it must have been due to lifting heavy weights. Thinks it has not increased in size since first discovered. Thought nothing of it for six months, when, on running, he was suddenly seized with cramp of the muscles of the thigh and calf and pain in the groin. On putting his hand to the tumor found it pulsated more violently than usual. Author applied piece of adhesive plaster on leather, and over it a spica bandage. Left it on from March 3rd to March 8th. On removal the tumor had become hard and unyielding, and pulsation had ceased in all arterial trunks of the limb. On the 22nd of March the tumor was still hard and consolidated and without any pulsation. There was apparently an obliteration of its cavity, the contents of which had undergone some diminution from absorption. Patient allowed out of bed. April 2nd. walks about with greater ease and free-

dom than when admitted, but still with pain in calf. April 19th., returned to hospital for observation. Complains of pain in calf; numbness of foot at times; circulation apparently restored sufficiently for proper nourishment of the limb, but pulsation has not returned in any of the arterial trunks. Size of tumor decreased considerably, and aneurysm undoubtedly cured.

Arthur further discusses cause of consolidation of aneurysm in these circumstances. Thinks it is not entirely due to blood clotting, but, partially at least to plastic action on part of wall of sac.

Case IV. Spaulding, Lyman. Case of Aneurysm Cured by Spontaneous Concretion of the Sides of the Artery. Medical Repository, 1810, i, 348-353.

Man aged 65, in April 1804 first noticed swelling about the middle of left thigh on course of femoral artery, nearly size of hen's egg. In November 1806

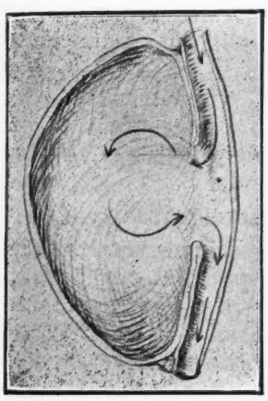

Fig. 7.—Schematic presentation of the original hiatus.

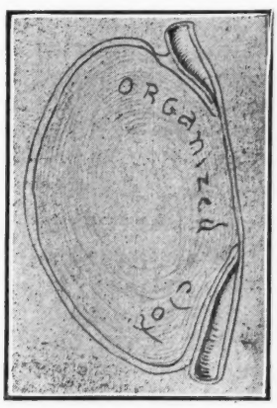

Fig. 8.—Obliteration of the lumen of the artery by the organized clot.

first noticed pulsation in the tumor, which was much increased by violent exercise, and in January 1807 noticed coldness and numbness down inside of knee to foot. In September 1807 he applied a bandage himself; tumor had increased to size of man's fist and pulsation was very strong. In January 1808 pulsation so strong as to be perceptible through clothes. He again applied a bandage, but on second day pain compelled him to remove it. On its removal the pulsation stopped and was never again perceptible. Coldness and numbness were now increased and continued till operation when they subsided. On the 25th of March tumor became painful and inflammed. On April 6th operation agreed on. Tumor now extended so high into groin as to leave barely room for tourniquet. When tumor was laid open, to the surgeon's surprise no fluid arterial blood was seen; the black, clotted blood was removed, but there was no hemorrhage. On careful examination it was found that the coliber of the artery had been obliterated above and below the tumor by a natural adhesive process. When the tumor was opened a singular substance appeared, about the size and shape of a man's open hand, placed longitudinally, one edge being towards the bed of the tumor, and the other towards its surface. This was in the midst of the grumous blood, and not in contact or connection with any part of the tumor wall. It was of a light florid color, with longitudinal fibres, of the consistence of long boiled beef, and could be shredded in the same way. It is probable the gluten of the blood had been converted into this fleshy mass by having been forcibly driven through the aneurysm. Later there was a hemorrhage from the sloughing off of some mortified flesh, exposing another vessel. Six months after the operation the patient enjoyed better health than usual.

There are two singular points in this case: the fleshy mass in the coagulated blood and the obliteration of the caliber of the artery, whereby a spontaneous cure of the aneurysm had taken place. There was no doubt the caliber of the artery had been obliterated. The probe was repeatedly passed into it from the aneurysmal sac, and the cavity of the artery could be plainly deciphered above and below the tumor, terminating in a cone, beyond which the probe could not be passed. The circulation through the aneurysmal tumor was impeded probably by the growth of the fleshy mass and the blood was compelled to seek some other route. The collateral arteries were enlarged and anastomosed in direct proportion to the obstruction of the main artery, and the caliber of the artery gradually accommodated itself to the diminishing quantity of blood sent through it. The obstruction was increasing and the collateral branches enlarging and anastomosing while the circulation through the tumor was diminishing and the bore of the artery contracting. The process was gradually carried on till the obstruction was complete; the anastomosing branches were so enlarged as to convey all the blood sent to the limb and then the sides of the main artery adhered by a natural process, a new circulation having been established much in the same way as after an operation for aneurysm.

The exact time which the process commenced or ended is not known. An important change appears to have taken place the first of January when the bandage was applied the second time. The tumor then increased very rapidly in size, the pulsation became extinct and the coldness and numbness of the limb were much more severe than ever before. It is supposed that at this time there was a rupture of some of the coats of the artery, and that the circulation was formed, as the coldness and numbness after this began to abate and since the operation have practically ceased.

The Author's Case—That there should have been repeated traumata at the site of the aneurysm, with rupture of the arterial coat, obliteration of the cavity, absence of discernible pulsation beyond, and an evident satisfactory establishment of collateral circulation, with no other phenomena traceable to the tumor formation, justifies the presentation of the following case:

On March 21st, 1917,Turner Evans, colored, age 32, single, entered the Virginia Hospital, Richmond, Va., complaining of a tumor on the anterior aspect of the right thigh, just below Poupart's ligament; it was the size of a grape fruit and had been inconveniencing him so much on account of the size of the growth and pain that he was unable to carry on his work. For two years he had been at work at a band rip-saw as a planer. At the rip-saw he had

to reach over at arms length, catch the planks and throw them to one side, he had noticed that the level of the table struck him just where he now has the tumor (at the level of the saphenous opening). He had been working about eighteen months when the tumor appeared about the size of a walnut. He continued to work, however, until it got larger and began to throb. He then consulted a physician who gave him an application to put on the swelling and told him to rest a week before returning to work. But the growth continued to increase in size and at this time was probably as large as a pool ball. He did not return to work for about three weeks, the rest in bed having made the swelling decrease somewhat. He noticed in November a return of the pain and that it increased constantly in severity, and that there was now a coldness and numbness in the right leg, but that it was not swollen. On account of the pain in the tumor he was forced to give up his work in February, and entered the hospital March 17th. He had noticed that the tumor had never throbbed since it was the size of a walnut.

Examination. A well nourished man, weighs 145 pounds; heart, lungs and abdomen negative; there is no edema of the leg or thigh below the tumor; the measurements from below the level of the tumor are the same on the left leg as on the right. There is no edema and there is nothing noticed about the nails or trophic centers on either side; the sensation in the leg is good, and the reflexes the same on both sides. On the anterior aspect of the right thigh, about the saphenous opening, is seen a large symmetrical tumor about the size of a grape fruit. The skin over the mass is normal, there is no discoloration, nor are any varicose veins noticed. The tumor is well rounded, form, its limits are well defined, apparently it is fixed superiorly, and enjoys a greater excursion laterally and less supero-inferiorly; at its lower pole it is somewhat more superficial and is fixed by the fibers of (what is taken to be) the sartorius muscle, which may be felt crossing internally and anteriorly from above downward. The tumor is distinctly cystic in character, but varies in its consistency, it is not painful, no thrill is obtained and no bruit can be elicited, there is no pulsation.

Right Radial B. P. 118,

Left Posterior Tibial B. P. 130.

No pulsation could be elicited in the right leg below the level of the tumor.

3.21.17. Urinalysis-Turbid, reaction acid, Specific Gravity, 1023, no albumen, no sugar, no diacetic acid. Indican positive, pus, blood, mucous, crystals, casts, chlorides negative.

3.21.17. Blood examination, whites 9,400; polynuclear 60, large mononuclear 7, small mononuclear 37, eosinophiles 1.

3.28.17. Wassermann, 4 plus.

3.30.17. *X*-ray examination. Soft tissue tumor, not involving bone, probably aneurysm. Dr. A. L. Gray.

3.20.17, Pulse 80, temperature 98.6, respiration 20,
4. 3.17. Pulse 96, temperature 99.4, respiration 22.
4. 2.17. Pulse 80, temperature 98.6, respiration 22, Operation

April 2nd. Under general ether narcosis a long incision (10 inches in length) is made from the summit of the tumor downward on the anterior aspect of the thigh, the skin and fascia are retracted, the fibres of the sartorius are thinned out in parallel bands coursing over from the upper to the lower pole. On retraction internally the covering of the mass is noted to be of a more gray-blue color, with apparent necrotic areas here and there on its surface, one of these spots breaks down and allows about an ounce or so of black clotted blood to evacuate itself. The line of cleavage is difficult, the tumor is freed laterally, it is now attached only by its two extremities, the femoral vein at this point is torn and requires ligation, as quite a little hemorrhage starts up; this is readily controlled. The tumor is reflected upward, stripped from the crural nerve, which lies behind the growth, the femoral artery is doubly ligated with heavy catgut about two centimeters below Poupart's ligament, the artery is similarly tied off just below the tumor, the fascia is brought together with continuous catgut, rubber drainage is inserted and brought out at the lower angle of the wound and the skin is sewn up with silkworm gut. The tumor is symmetrically round and measures 10 inches in circumference.

Report by Dr. S. B. Moon, Professor of Pathology, Medical College of Virginia.

ANEURYSM OF FEMORAL ARTERY.

"The specimen, after fixation for several days in 10% formaldehyde, is nearly spherical, but distinctly flattened on one side. It is a sac, apparently formed of the distended arterial coat, and coated over most of its surface with closely adherent fibrous or muscular tissue. In size it measures 10 inches in circumference. The wall is nearly as thick as that of the artery except on one side, where it is thin and translucent. The attached artery communicates with the sac obliquely, and then is lost in its wall, becoming apparently obliterated.

Within the sac are two large somewhat laminated clots, and several smaller ones, the rest being filles with coagula which shows a tendency towards lamination, concentric as to the sac."

The patient made an uneventful convalescence and left the hospital in two weeks having been warned to continue his "mixed treatment pills."

February 1, 1918, he reports he has been at daily work since June 1917, gained in weight. The sensation, appearance, curculation and reflexes of the leg are perfect, and no evidences of aneurysm formation can be noted elsewhere.

THE DIAGNOSIS OF GONORRHEAL VAGINITIS.

To establish the diagnosis of gonorrheal vaginitis in children and infants, it is necessary to have: 1, A purulent discharge from the vagina. 2, The intracellular Gram-negative diplococcus of Neisser must be discovered in the pus cells (smears and cultures are facilitated by the endoscope). 3, This organism must further be grown on suitable culture media and properly identified as the gonococcus. 4, In case of doubt, complement-fixation tests and agglutination tests should also be resorted to. In the absence of these tests we are not justified in considering any vaginal discharge in children as gonorrheal, nor are we justified in treating it as such. The smear examination, even by the Gram stain of secretion or discharge from the vagina, is unreliable and misleading, and hence valueless as a method of diagnosis.—I. C. RUBIN, M. D., *in The Boston Medical and Surgical Journal.*

SYSTEMIC MANIFESTATIONS OF DISEASE IN THE THROAT.

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While in its broad sense the title assigned me would include systemic disturbances coincident with toxic absorption from acute infections of the throat, such as diphtheria, follicular tonsillitis, Vincent's angina, etc., I take as the intention of the committee that I shall discuss the causal relationship between chronic tonsillar infection and systemic diseases.

It has long been known that local infection in the mouth and throat may cause general infection, yet only in the last ten years has the medical profession developed an interest in focal infections and their etiological relationship to systemic disease. This has been made possible by our increasing knowledge of bacterial life and its effect upon the animal economy.

Billings, who has contributed largely to the literature on the clinical manifestations of focal infection, defines a focus of infection as a circumscribed area of tissue infected with pathogenic micro-organisms. The focus may be primary, as we find it communicating with the skin or mucous membrane, or it may be secondary, the lymph and blood streams or contiguous tissue acting as the means of extension.

While primary foci may occur in any part of the body, it is now generally believed that the mouth, throat and nose with its accessory cavities, furnish the most common sites for primary infection. The genito-urinary, alimentary and respiratory tracts and the skin are also not infrequently the sites of primary confined infection.

Since the advent of the microscope and the development of bacteriology, we have known that the mouth, nose and pharynx constantly harbor many varieties of pathogenic germs, among them being the various forms of streptococci and staphylococci, pneumococci diphtheria bacilli, tubercle bacilli, etc., besides a great variety of saprophytic organisms. In addition to bacterial life, certain fungi, unicellular animal life, and the protozoa, have been found in the mouth and throat where they are known to have caused infectious diseases. The presence of the entameba buccalis in pyorrhea alveolaris and its frequent presence in the tonsillar crypts, has in the last few years been recognized and its significance much discussed.

The knowledge that the tonsils harbor various pathogenic micro-organisms and the observation that acute tonsillar inflammation frequently preceded attacks of arthritis, led to further investigation regarding the relationship between the two. For some time the causal relationship was based only upon this clinical observation, and upon the relief obtained from recurrent joint and muscle inflammation, as a result of the removal of the tonsils.

As late as three years ago Dr. Lewellys F. Barker, Professor of Medicine at the Johns Hopkins University, in his study of arthritis, spoke of the fact that a number of bacteria had been described as the cause of acute rheumatic fever; but that a large number of blood cultures to determine the presence of bacteria (in the blood) had been made by competent bacteriologists with uniformly negative results. His own studies of blood cultures and of the synovial fluid of arthritics were uniformly negative, yet he looked upon acute rheumatic fever as a definite infectious disease probably depending upon a primary infection in the throat, with secondary invasion of the blood by the virus and a final metastatic involvement of the joints and other parts of the body.

The belief has beeen growing that malignant endocarditis, myositis, myocarditis, and various other internal diseases formerly of obscure origin, are the result of a confined focus of infection. In 1914, Poynton and Payne in England and Rosenow in this country were able to isolate bacteria from the blood of individuals affected with acute polyarthritis. To Rosenow most of the credit is due for his careful and painstaking animal experiments in an endeavor to prove the theories as to the relationship of focal infection to constitutional diseases, and that arthritis, endocarditis, myositis, and the various lesions occurring secondarily to cutaneous and mucosal infections are due directly to bacterial migration.

Rosenow was able by special methods of culture to grow the streptococcus from the blood and synovial fluid of arthritics. All of you are no doubt familiar with his mutation experiments. He has been able to transform the pneumococcus isolated from the blood of a pneumonia patient into a hemolytic streptococcus by passage through several animals, and with these transmuted forms injected into the body of animals has produced arthritis, myositis, nephritis, gastric ulcers, etc. It has been shown that in acute rheumatism the primary focus frequently shows the pneumococcus on cultural examination, while from the blood are grown chains of streptococci. Rosenow further produced rheumatism by injecting the streptococcus

isolated from the blood of rheumatics. Following the postulates of Koch, the streptococcus taken from the tonsils, grown in pure culture and injected into animals, caused myositis, endocarditis, etc. At present a number of investigators have been able to substantiate Rosenow's results, though many, probably on account of faulty technic in method of isolation and inoculation, have failed to do so.

Barker, in his more recent publications on the subject (Monographic Medicine, 1916), accepts Rosenow's views after having sent one of his assistants to work with Rosenow and acquire his technic. He has since been able to isolate streptococci from the blood of arthritics similar to those described by Rosenow.

In a recent contribution on the bacteriology of focal infections W. R. C. Voigt (J. of Oph. Otol. & Laryn., 1917) speaks especially of the gravity of the staphylococcus. He states that the majority of local infections in which this organism is present have to be considered dangerous because metastases often occur, and bacteremias and septicemias are not infrequent. Even where infection remains local, damage is always done by toxic absorption. He classifies the streptococci according to their potence and impotence to manufacture hemolysis. He found the hemolytic variety in 30 per cent of all cases of diseased tonsils, especially of the atrophic variety, and in about 80 per cent of all cultural examinations made from the depths of the crypts of enucleated tonsils.

While the exact nature of the systemic infection arising in the throat is yet uncertain, it is evident that practically any part of the body may be the site of the secondary infection,—foremost are acute and chronic polyarthritis, myositis, myocarditis, malignant endocarditis, pericarditis, acute nephritis, acute appendicitis, cholecystitis, pancreatitis, thyroiditis, chorea.

It does not follow that an individual with a focal infection in the throat or elsewhere will necessarily develop secondary systemic disease, for it is evident that only a small proportion of those having primary foci develop constitutional disease. The streptococcus, for instance, may be a constant habitant of the mouth (tonsil) throughout life without making its presence known, whereas in others it may cause lesions in distant portions of the body.

This relatively rare systemic invasion from focal infection is explained by the formation of a defending influence within the body, incident to bacterial activity. Locally this defensive process consists in the action of the leucocytes in forming walls around the bacterial foci, which lessens the probability of systemic infection, and in the phagocytic action of the leucocytes and consequent bacterial destruction. Generally this defensive action consists in antibodies formed incident to bacterial growth and their dissemination through the blood and tissues, thereby lessening or arresting bacterial growth.

It is not uncommon for secondary foci of infection, such as infected lymphatic glands, to be the source of systemic infection either in the presence of the primary focus or after the distal focus has been removed. It is also possible for structures like the tonsils, which are usually the site of primary infection, to become infected secondarily to other structures and then to eventually cause systemic invasion.

From a practical standpoint it would interest us to know just how we can determine, in a given case of constitutional disease, whether the tonsils are the site of the primary focus. All of us have had patients referred to us to determine whether the tonsils were the cause of this or the other infection, and you will agree with me that our task has not always been easy; sometimes, in fact, an impossible one.

It is, of course, unwise to conclude that because an individual with polyarthritis, endocarditis, myositis or kindred affection has had an occasional attack of sore throat, that his tonsils are necessarily at fault in the etiology. Other avenues of infection, such as the nasal sinuses, the teeth, the alimentary and genito-urinary tracts, must be borne in mind, and, even though we find by bacteriological examination of the tonsillar crypts that they contain pyogenic bacteria, the remote infections are not necessarily due to the tonsils. On the other hand, too, the absence of infectious elements in the tonsillar crypts does not exclude the possibility of an etiologic relationship between the tonsils and the systemic disease. In such cases the infecting element may have disappeared in the tonsils and have invaded a proximal chain of lymphatic glands through which the more remote infection has occurred.

In a general way I believe we are justified in saying that the appearance of the tonsils cannot be taken as a criterion whether or not they are a menace to the individual. It is reasonable to assume that the chronic hypertrophy which develops during childhood is due to recurrent attacks of inflammation of varying degree brought about by the presence of pyogenic micro-organisms, yet all hypertrophied tonsils are not infected, and outside

of the local disturbance resulting from their mechanical presence they are not a menace to the body.

We naturally determine as far as possible the condition of the tonsils in a case in which these organs are suspected of being foci of infection. The palpable cases of diseased tonsils with encased pus showing through the mucous membrane, or where the crypts are readily emptied of foul masses by the use of air pressure, are not the ones that leave doubt of their infectious nature, nor are the large spongy tonsils with more or less redness around the fauces; but it is in the cases where nothing abnormal can be detected with the naked eye, even when the patient retches and forces the tonsils forward and exposes many of the crypts, where the decision of cause and effect is difficult.

One of the most valuable signs indicative of tonsillar infection is glandular enlargement in the neck, more especially the gland lying in the angle between the facial and internal jugular veins below the angle of the lower jaw. As this gland forms the first relay of the lymphatic vessels emanating in the tonsil fossa, it readily becomes enlarged and oftentimes tender to the touch during tonsillar infection, and hence furnishes a valuable aid in identifying the tonsils as a source of systemic infection.

Whenever the tonsils can readily be recognized as the foci of infection, in cases of systemic disease, their removal is imperative and should be urged; but not before other structures in the body which are frequently the sites of focal infection are eliminated. In the absence of sinus disease, with no alveolar abscess, or pyorrhea alveolaris, and with reasonable assurance that the alimentary and genito-urinary tracts are not at fault, it would seem that tonsils and adenoids should be removed in cases of systemic involvement, even in the absence of any history of tonsillar disease, and in the absence of any apparent trouble in these structures.

As the association of the tonsils with arthritis, myositis, etc., is of recent origin, the literature contains but few case reports to furnish proof of the permanency of the results after tonsil operations. In the Bulletin of the Johns Hopkins Hospital for 1917, Crowe, Watkins, and Rothholz report ninety-one instances of infectious arthritis in which the tonsils were removed, of which thirty-one patients could be followed and the ultimate results noted. In twenty-four the joints were normal after one to two years. In some the patients were worse for a while and began to improve after two to three weeks; oftentimes it was six to eight months before all joint symptoms disappeared. In four cases the joint lesions were improved but not cured. Two patients were not improved, and one has been worse since the operation.

In all cases of myositis after a year or two the trouble had entirely disappeared. In acute rheumatic fever (polyarthritis), often with heart lesions, the joint disease disappeared, but the heart complication was permanent in many cases.

In eighteen patients with nephritis, sixteen of whom had a history of tonsillitis and eight having either cardiac or joint lesions, twelve showed no albumin eight months to three and a half years after the operation.

CORD INJURIES IN SPINAL FRACTURES*

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Until the last few years surgeons generally were of one opinion as to the proper treatment of cord lesions following fracture. Briefly, this opinion was that in fracture with symptoms of partial injury to the cord, in the absence of bony deformity, or of determinable loose fragments of bone, it was wiser to defer operation until the cord had made what repair it could, or until improvement had come to a stand-still; and that fracture with complete abolition of function below the injury apparently proved a complete cord lesion and no operation was justifiable.

This stand was taken by surgeons for two reasons: (1) It was generally believed that all the injury to the cord was immediate, received at the time of the fracture. Therefore as lacerated cord fibres do not regenerate early operation was useless. (2) Laminectomy was a fairly dangerous operation.

Progress in any department of medicine is slow and gradual and in no branch of surgery has progress been hampered more by the beliefs and practices of the past than in spinal cord surgery. Examination of text books and recent articles show that very many surgeons still adhere to the opinion that in the great majority of cord injuries following fracture it is better to delay operation for periods of time varying from weeks to months. This stand is not justified in this day, I believe, and cannot be defended on theoretical, experimental, or clinical grounds.

Fractures of the spine without cord injury are rather numerous. According to Pierce Bailey, in almost one-third of the cases of fracture, the cord escapes injury. These cases are to be

*Read before the New York and New England Association of Railway Surgeons, November 8th, 1917.

treated as are skeletal breaks elsewhere, by immobilization, and are not of especial interest to the neurological surgeon unless signs of cord or nerve-root involvement arise later, due to new bone or scar formation. In the last two years I have seen five such cases, two in the cervical region and three in the dorso-lumbar region. In all five cases there was extensive destruction of bone; in three of them the vertebral body being almost completely crushed and yet there were no signs of cord injury. As we know that several laminae can be removed without appreciably weakening the spine, and as these cases show extensive destruction of the vertebral bodies without cord injury, it would appear that the main strength or support of the spine lay in the articulations of the transverse processes.

Fractures with cord injury may be easily divided into two classes: first, fractures with symptoms of partial abolition of function, and, second, fractures with symptoms of immediate complete abolition of function.

In fractures with signs of partial lesions of the cord, the opponents of early operation have maintained that the damage to the cord is immediate following the injury, that laceration of the cord cannot be remedied by laceration and that the nerve fibres, if severely injured, degenerate whether compression is immediately removed or not. That removal of pressure by early operation will not cause the already destroyed fibres to regenerate is true. But the opponents of early operative interference have overlooked several important facts; that is, in fracture with damage to the cord, there are other factors that will work harm to the nerve fibres in addition to the damage received at the moment of injury. The immediate damage is due to fragments of displaced bone causing contusion or laceration of the nerve fibres, or a narrowing of the canal by the fractured laminae or a projection backward of a vertebral body causing compression of the cord. In these cases the symptoms of cord injury arise immediately after the accident. The other factors I spoke of are:

1. Hemorrhage, either into the cord substance, causing laceration of the fibres or hemorrhage around the cord, either intra- or extra-dural, causing compression of the cord. In these cases the symptoms come in slowly, may be hours after the injury, and are usually progressive.

2. Edema both within and around the cord, causing compression of the fibres. In itself edema gives rise to symptoms that appear, like those due to hemorrhage, some hours after the accident, and these symptoms are progressive. This edema, present after every injury to the cord, and by its compressive effects so destructive to the nerve fibres, forms one of the chief reasons for early operation. Its power to harm has been overlooked in the past and recent operations have shown that in many cases, signs indicating injury or compression of bone are really due to the compressive and destructive effects of the edema.

A factor later appearing is narrowing of the spinal canal at the site of injury by new bone growth or the formation of scar tissue; here the symptoms arise months after the injury.

These factors operate singly or in combination. It is only in rare cases and in the slighter injuries that these factors operate singly. In the majority of fractures of the spine, two or more, and at times, all of these factors are seen. That is, in fractures with laceration or compression of the cord by displaced bone, there is usually hemorrhage in or around the cord, it is always followed by edema, and often later by narrowing of the cord space by new bone growth or scar formation. However, in nearly every case one factor such as compression by bone, or hemorrhage in or about the cord so predominates as to render the other factors neglible for the time being, though later these other factors will add their quota to the sum-total of the symptoms, and have a strong effect on the outcome. In partial lesions of the cord there are found destroyed, damaged and sound fibres side by side. Of the destroyed fibres nothing is to be expected. aged and of many of the sound fibres depends on whether the factors producing the injury are temporary or permanent. These factors are they will not regenerate. The fate of the dam compression by bone, blood and the certain edema which appears after every injury to the cord. If this compression is quickly removed not only will the sound fibres be preserved but functional and even anatomical repair will take place in many of the damaged but not destroyed fibres. But if compression due to any or all of the above mentioned three factors is at all severe and is allowed to continue for as short a period as four days, not only will secondary degeneration appear in the damaged fibres but many of the sound fibres will also be involved. If operation is not done early, compression by bone, by hemorrhage or the quickly following edema may

work permanent harm. Interruption of conductivity of nerve fibers after fracture does not necessarily mean that those fibres are destroyed. In practically every case of partial injury to the cord many of the interrupted fibres will later functionate, and it is to preserve the integrity of the sound fibres and to give the best chance of recovery to the damaged but not destroyed fibres that early operation is urged. If these symptoms occurred in a structure of greater reparative power than the cord, a delay in operation would be justifiable in order to permit of recovery of the fibres from the initial injury but delay with tissue so feebly resistant as the cord in the presence of continued compression by bone, hemorrhage or edema, may cause permanent damage. In former years laminectomy was a formidable procedure, and operation was delayed on this account but with the present day improvement in technic and asepsis, the danger of laminectomy in skilled hands it but slight in comparison to the possible benefits.

The late John B. Murphy said: "In fractures without considerable displacement we are justified in assuming that the cord is not suffering continued compression regardless of the degree of paralysis; operation is not indicated. If this paralysis is due to laceration it will not be improved by operation. If it is due to the contusion it will recover without operation."

This advice might be good if displaced bone was the only factor in compression. But it overlooks the factors of hemorrhage and edema which, unless removed by operation, augment and continue the initial compression. It is true that lacerated fibres will not be improved by operation. It is not for their sake early operation is urged, but to give the best chance of recovery to the adjacent damaged compressed fibres and to preserve the sound fibres.

Allen has demonstrated the baneful effects of the edema by the improvement following experimental incisions into the cord after spinal fracture in animals.

This condition of cord edema is analogous to that seen in the cranial cavity after fractures of the skull. And just as the urgency of the symptoms in fracture of the skull call not so much for the location of the fracture and determination of hemorrhage, but for the relief of the general intracranial pressure, so in spinal fractures the demand is for relief of intraspinal pressure; and this is even more important than in head injuries, for the so-called silent areas of the brain do not exist in the cord where serious damage to any part of the cord means permanent loss of function. The necessity of accurate diagnosis as to whether the damage is caused by contusion, laceration, or compression by bone, hemorrhage or edema does not exist. The urgent indications are for "spinal decompression" by laminectomy with free opening of the dura, giving the cord fibres the best possible opportunity for repair.

One stated objection to the early operation, or in fact to any operation in the absence of deformity, is that in many reported cases of early laminectomy little or no improvement followed, though no displaced bone was found; "and as the cord appeared normal, the dura was not opened." Such observations are similar to those regarding so-called cranial decompressions when the dura is not opened.

Compression of cord fibres by edema will not be relieved by the removal of the laminae alone. And just as in head injuries, removal of bone will not relieve the intracranial pressure unless the dura is also opened, so in spinal fractures a free opening for the dura is most important and should always be done.

It is said by many surgeons that early laminectomy adds insult to an already damaged cord, and yet these surgeons advise in midcervical fractures, with danger of involvement of the fourth cervical segment, immediate operation to prevent respiratory troubles.

E. W. Taylor, who holds that the damage to the cord is immediate following the injury, and that delay in operation is advisable, reports a case, and exhibits the cord of a large extradural hemorrhage, with organization of clot and resulting compression and paralysis of which he says that "operation would have been of benefit." Then why advise delay until the cord is irreparably damaged, as a wait of only four days may cause degeneration of the compressed fibers.

Bottomley also says that in partial lesions of the cord, if after waiting (weeks or months) no improvement occurs, or if improvement occurs and then ceases or retrogrades, operate. And yet what can be done by a late operation, in the face of continued compression of the cord by bone, hemorrhage, or edema, over a long period of time, that could not be better done and with more chances of benefit by an early operation.

Even if the symptoms of cord injury are but slight, if they are progressive, laminectomy should be done and the dura opened to allow of

drainage or whatever hemorrhage may be present and to ward off by this spinal "decompression" the effects of the edema which invariably follows injury to the cord, and which is so destructive to the delicate fibers.

Fracture with symptoms of immediate, complete abolition of function. It is in this type of fracture that the opinion of surgeons is most sharply divided as to the advisability of operative interference. Many hold that immediate complete motor and sensory paralysis, with abolition of all reflexes below the lesion and loss of sphincter control, shows a total transverse lesion of the cord, and laminectomy is unjustifiable and can do no good. This would be true did the above symptoms positively indicate, as they do in many cases, complete destruction of the cord. But there have been many cases reported in which all the above symptoms were present and were considered complete lesions of the cord, in which later partial function returned even without operation, an many reported in which operation was followed by fair recovery.

Mixter and Chase report a case of fracture of the 4th, 5th, and 6th cervical vertebrae, with immediate symptoms of complete destruction of the cord. Operation was done twenty-four hours after the accident. Six days later sensation returned over the entire body. In two weeks there was some return of the reflexes and the patient finally recovered fair control over the bladder and fair use of the legs.

Guy Hinsdale reports a case of a woman with fracture of the 1st, 2nd and 3rd dorsal vertebrae, and complete and immediate paralysis of the body below the nipples. Laminectomy four days later showed the cord was edematous and pink, and much fluid escaped. Three years later the patient could walk with assistance, had control over the bladder, and touch sense was normal on one side.

The Bastian-Bruns, so-called, law, which is that there is a total loss of tendon reflexes in complete lesion, is, as an aid in diagnosis, only of value in a negative sense. That is, the presence of reflexes makes it certain that there is not a total lesion, while the absence of reflexes is not proof that the lesion is total unless such absence is persistent. In many cases of partial lesion there is a total loss of reflexes for more than eight days; so that there are no symptoms short of a deformity at the site of injury so great as to show complete obliteration of the spinal canal, which prove a complete transverse lesion of the cord.

Other surgeons hold that in the absence of bony deformity as determined by the fingers and the roentgen-rays and with complete abolition of function, while it does not prove complete destruction it is better to delay operation until the cord has had an opportunity to recover what power it can; and when improvement ceases to operate.

Bastian, Kocher and others have outlined symptoms which indicate complete lesion of the cord, but the cases described above and many others show that these symptoms do not prove destruction of the cord, and we cannot rely upon them. Kocher believes that operation is unjustifiable in case symptoms of complete lesion are present, and favors operation in partial lesion when symptoms have come to a standstill. But, as we have seen, the symptoms of complete lesion are not absolutely trustworthy, and delay in partial lesion may irreparably damage the cord.

In my opinion, early laminectomy in skilled hands is the best treatment by far in fracture of the spine with cord lesions, and the only contra-indication to operation is a bony deformity so great as to show beyond doubt that the spinal canal is obliterated and the cord hopelessly crushed.

The operation should be performed as soon as the patient has reacted from the shock and the site of the lesion localized. A free opening of the bony canal will relieve compression by bone, whether due to driven-in laminae or a backward projecting vertebral body causing angulation of the cord. If a projection presses against the cord in spite of the removal of the laminae, sufficient bone can be chiseled or ronguered to give the cord ample room. A free opening of the dura will permit of removal and drainage of blood, and will offset the compression of the following edema. The dura may be reclosed or not, as indicated by the condition of the cord. In many cases it is best left open. In cases with paralysis of the bladder, *catheterization should never be attempted. If it is done, the resulting cystitis will carry off 50 per cent. of the cases.* Message of the neck of the bladder, or hot rectal injections will usually be found efficacious.

What shall be done in those cases in which at operation the cord is found completely divided? It is almost generally agreed at the present time that cord fibres once severed do not regenerate. Murphy said that if the cord is sev-

ered, approximation will avail nothing. However, of the five cases reported of severed cords sutured, four were living several years after operation, while without suture no patient has lived over one year. The great improvement following suture, in the sensory and trophic disturbances, thus averting the terrible bed sores warrant suture for this alone. The writer believes that suture of a severed cord should be attempted. If the ends cannot be approximated and the lesion is in the dorso-lumbar region—an attempt should be made to unite the roots above and below the lesion, as suggested by Kilvington. This cannot be done in the upper dorsal or servical regions, because of the short course of the roots in the canal.

In conclusion—We all know that there has been and still is a wide divergence of opinion among surgeons, as to the propriety, and as to the proper time of operating on these cases of cord injuries in spinal fractures. The divergence of opinion I feel is largely due to the fact that laminectomy has been regarded as a dangerous operation. But with our present day technic and asepsis, this is no longer true. In the absence of any deformity so great as determined by finger or *x*-ray, a deformity so great as to prove obliteration of the bony canal and destruction of the cord, in the absence of this, I say, there are no signs that reveal to us the extent or character of the injury. In a tissue so important and so fragile as the cord, delay may cause irreparable and permanent damage.

There are many cases seen of old fracture with cord lesion on whom, for various reasons, no operation was done or the operation was not completely successful. They present symptoms varying from simple foot-drop or spasticity of one extremity to paralysis with loss of bladder control. Many of these show increasing impairment of function due to late scar-tissue formation and collecting of fluid at the site of the lesion or to new bone growth. Many of these cases can be improved by operation even at a late date, and in some a brilliant result is secured. These patients should not be abandoned as hope less cripples merely because a period of several months or even years have elapsed since the injury was received. Although operation will completely relieve but few of them, yet definite improvement may follow laminectomy even at a late date.

However, the many cases reported of benefit resulting from late operation when symptoms of progress cease or retrogression sets in, only indicates the good that could be done by early operation, for the factors of continued compression, bone, hemorrhage, or edema that brought improvement to a standstill had certainly worked harm that would have been prevented by early operation.

Therefore, I believe that in every case of fracture of a spine with damage to the cord, excepting only complete obliteration of the bony canal, an early laminectomy is urgently indicated to relieve the cord of the damaging effects of bone-pressure, hemorrhage, and edema, and to give the nerve tissue the best possible chance for repair.

CONCERNING BIRTH CONTROL—THE PHYSICIAN'S OBLIGATION.

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On one occasion a distinguished jurist, upon being interrupted in the midst of a brilliant argument before a jury by a question from opposing counsel, responded: "The friction of men's minds causes the sparks of truth to scintillate."

The problem to which I direct your attention is not a new one,—but the medical profession as a whole has rather avoided its just responsibility in this matter by leaving the propaganda of birth control in the hands of ultra-radicals,—and its discussion in many instances has been associated with more or less coarseness and obscenity.

Such moving pictures, as "Where Are My Children?" "'The Unborn" and "Race Suicide,'" purporting to portray the purpose of the birth-control movement, are not only misleading, but are unjust and create a false impression.

As a practicing physician, therefore, and one deeply interested in social work, I desire to embrace this opportunity to invite upon this question the dignified and intelligent discussion which only physicians in good standing can bring.

In discussing this serious problem let us not confuse it with that other difficult and grave question of the induction of abortion, for, as says Yarrows of Chicago: "The birth-control movement deals only with the means of preventing conception, and the dissemination of knowledge concerning the intelligent use of such means as well as with the exercise of self-control."

To review briefly the history of this movement it is necessary to go back for over a hundred years,

—even to Malthus and his "Essay on the Principle of Population," first written in 1798. Malthus himself is pictured as a man of great magnetism, possessing a beautiful moral character,—the central principle of his essay was, as you know, that human beings are cursed with a power of reproduction quite out of proportion to their power to maintain all the individuals who may be born,—thus resulting in either misery or vice, unless a possible escape from this dilemma could be found through the exercise of "moral self restraint." Improvident marriages he sternly condemned,—refusing, however, to discuss or even to countenance the proposal that once persons were married, the size of their families should be made subject to deliberate control. He had demonstrated that over-population was the main source of suffering and vice, but had discountenanced the conclusion that such vast evil might justify resort to distasteful remedies, and in the opinion of many he had left the picture as black as he had originally painted it.

Jeremy Bentham, James Mill, John Stuart Mill, and Grote, the historian, were led by the teachings of Malthus to the conclusion that the ideal of the greatest good should be sought by the lesser evil, and Francis Place, a prosperous master-tailor, who sprang from the working class of London,—having learned by sad experience what over-population meant,—being the father of fourteen or fifteen children, gave his conclusions in 1822 in a book, "Illustrations and Proofs of the Principles of Population,"—that the only solution of the poor man's population problem was early marriage and limitation of family.

In the year following the publication of this book, leaflets were circulated throughout London designed to acquaint the working classes with means of preventing conception. These so-called "diabolical handbills," says Field of Chicago,—were first the cause of an outcry and then a more serious discussion,—and after attaining a considerable circulation were instrumental in bringing forth a more substantial pamphlet literature, of which Richard Carlile's "Every Woman's Book," and Robert Dale Owen's "Moral Physiology" may be mentioned as the most important items. The tracts attempted to deal with the physiological facts of reproduction as well as with the economics of over-population, and naturally prepared the way for the entrance of physicians into the Neo-Malthusian discussion.

In 1833, ten years later, Dr. Charles Knowlton of Massachusetts published his pamphlet "Fruits of Philosophy," in which he devoted a chapter to the prevention of conception. This gained a wide circulation in England,—and in 1876 furnished the ground for a prosecution which gave it great, though accidental, notoriety.

In 1854, just a few years prior to the Civil War, Dr. George Drysdale, in a remarkable publication, "The Elements of Social Science," taught that the physical and sexual functions of man were of equal importance and dignity to his mental functions, and that only by the prevention of conception could society escape the evils of poverty, prostitution, and celibacy.

This publication, together with a new edition of the Knowlton pamphlet published in 1877 by Charles Bradlaugh and Mrs. Annie Besant, precipitated their prosecution in the Court of Queen's Bench, before the Lord Chief Justice and a special jury, and both judge and prosecutor agreed that the able and dramatic defense had accomplished just what the prosecution had desired to prevent: the plea for Neo Malthusianism had been proclaimed to all England, and Mrs. Besant claimed that three months' sale of "Fruits of Philosophy" had disposed of as many copies as at the old rate would have lasted for eighty years.

This trial brought into prominence the Malthusian League, which became influential in organizing and diffusing Neo Malthusian opinions not only in England, but in Holland and New Zealand, and in many other countries the example has been followed, until the movement today organized or unorganized has practically become world-wide.

In New York City since last September Mrs. Margaret Sanger and various others have been disseminating birth-control principles, and have been prosecuted by the district attorney.

In the history of the movement the fact stands out prominently that the more the dissemination of birth-control principles have been opposed, the more it has flourished, attempts to suppress it have again and again given it fresh notoriety, and have aroused its partisans to new enthusiasm.

As intimated in the beginning, reputable physicians have been slow to accept their responsibilities in this matter, rather preferring to leave it in the hands of ultra radicals, who often have been in revolt against established religion, and the existing government, as well as traditional sex morality, hence discrediting the propaganda of birth-control by making it appear as the whim of immoderate and unbalanced minds. But, as says Field of Chicago: "Birth-control, no longer as a possibility only, but as an accomplished fact, *demands* our most discerning scientific attention. The practical question now is not whether the prevention of con-

ception shall be tolerated,—it is already tolerated and approved by great numbers of persons,—but under what circumstances is it to be tolerated, in what forms, for what purposes, to what extent, etc.?"

Our effort should be, not to keep it outside the moral pale, but to find a place for it among our civilizing discoveries.

As Yarrows of Chicago emphasizes, there are hundreds of children born into conditions physical and moral which mean neglect, high infant death rate, insufficient food, poor education with inevitable subsequent delinquency, vice, and crime. Other hundreds are born of syphilitics, epileptics, defectives, and degenerates,—these in addition to thousands who are conceived, but are never born, except through criminal abortion.

If I need then to make apology for directing your attention to this serious problem,—I would tell you that last June in my service at Grady Hospital out of one hundred and twelve patients, eighteen were admitted with incomplete abortions, and in July out of eighty-three patients admitted in one month alone, 20, or 25 per cent were for abortions complete or incomplete, and many of these gave a history of having had abortion done or begun with deliberation and; one of this number I distinctly recall, was admitted seven days following a criminal abortion, with septicemia and lived for only a few hours. The record at the hospital will show that these two months are not exceptions, but that the evil is continuous and increasing.

To continue to ignore this question is not therefore to save life, but to play into the hands of quacks and the abortionists. It is therefore in an effort to find aleviation for these ills, that we are forced to consider this question.

In Holland, New Zealand, and Great Britain a pamphlet may be secured for the asking in which in simple language directions for the prevention of conception are given. In these countries the number of abortions and unfit children has been greatly diminished, and the nations have become more vigorous and civilized. The fear of race-suicide has also been shown to be unfounded, for, while there has been a falling birth rate, there has been a corresponding falling death rate, showing that in the one case there were large families and many deaths, while in the other there were smaller families and few deaths. France, for example, in 1781 had no higher a rate of increase with a birth rate of 39 than in 1901 with only 21, for the fall of 17.8 in births was compensated for by the fall of 17.5 in deaths.

While we recognize the possibilities for evil in the unlimited freedom of birth-control, we are forced to admit that the prevention of conception is being practiced more and more by the intelligent, wealthy, and professional classes. The question for you and me to answer is: will we as physicians undertake our responsibility by furnishing scientific knowledge, or shall we leave it to the quack, and the ultra-radical?

Last September the medical society of Des Moines, Iowa, went on record as favoring birth-control. Professor Clarence Van Epps of the State University declared that the wealthy classes already have knowledge, and that the same knowledge should be given the poorer classes by the State.

Recently this question was favorably considered by a joint session of the Chicago Gynecological and the Chicago Medical Societies, and it is from the report of this meeting, published in the August issue of *Surgery, Gynecology, and Obstetrics,* that I have obtained many of the facts and ideas, and much of the verbiage here presented.

Like every physician, I suppose, I have directly or indirectly been requested at different times to induce abortion for various reasons, and my answer has always been a firm but unhesitating refusal. I should never entertain the suggestion of any such operation, unless the life of the mother is clearly in danger, and this fact has been positively substantiated by consultation with a colleague of unquestioned integrity.

But may I *urge* just here that when a toxemia of pregnancy seriously threatens a woman's life then there should be no delay in emptying her uterus. There is marked danger in waiting *too* long, even in a sincere effort to preserve for her her child, and both may be lost because of an over-conscientious but unwarranted delay.

To the question,—how may I prevent conception,—I have usually responded: If you don't want to get sea-sick, then don't go to sea.

In the future I am not so sure that I shall adhere so consistently to my policy relative to my answer to the latter question, for I am sure that there are many conditions wherein the physician's obligation to furnish scientific knowledge which may prevent misery, vice and crime.

But may I hasten to add, for fear that I may not be clearly understood, I believe that the greatest gift which God ever gave to woman is her power to become a mother, and I have no patience with, nor sympathy for, that woman who deliberately stultifies her womanhood. I agree with Dr. Anna E. Blount, who said that when the propaganda of

birth-control has become universal we will require another propaganda for voluntary motherhood. It needs to be the style and fashion for women to have fine children. This *also* should be a reform movement, and then we may have *fewer,* but a stronger and more enduring population.

In conclusion, if I may be permitted, recalling that famous expression of Cornelia, who when she called her sons to her side said, "These are my jewels," to employ a simile to that forceful aphorism of Thomas Carlyle: "This I call tragedy, that ONE woman should die childless, who possessed the LEGITIMATE ability, physical, mental and moral, to become a mother."

THE REPORT OF A CASE INVOLVING THE SURGICAL CORRECTION OF A DOUBLE HARE-LIP ALVEOLAR CLEFT, AND CLEFT OF THE HARD AND SOFT PALATE.

M. N. FEDERSPIEL, B. Sc., D. D. S., M. D.
Professor of Oral Surgery, Marquette University Dental School.
MILWAUKEE, WIS.

Name: W. V. M. Sex: Male. Age: 4 years. Nativity: American. Color: White. Weight: 34 pounds. Complaint: Hare-lip and cleft palate.

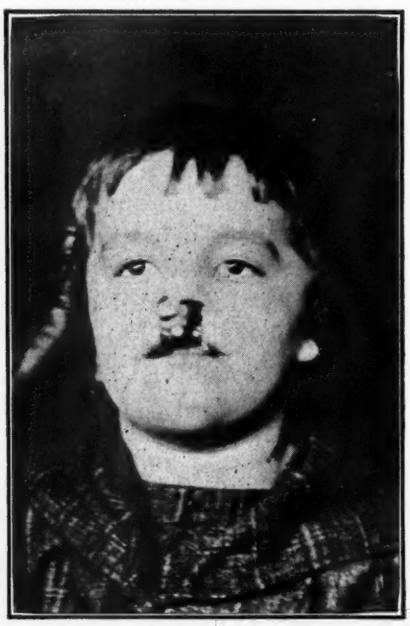

Fig. 1.—Showing a front view of a double hare-lip. The cleft on the right side cannot be seen because of the protruding osincisivum obstructing its view. See Fig. 2.

History: One of twins, youngest of family of five, three older children and twin brother normal. No history of hare-lip or cleft palate among relatives on father's side, mother, however, being left an orphan in early childhood, does not remember relatives.

Patient strong at birth, and suffered no children's diseases excepting cholera-infantum, was bottle-fed, always healthy and playful, and is now a well developed child.

Examination: A double cleft of the upper lip extending into each nostril, Fig. I; a double alveolar cleft, Fig. II; a very marked protruding premaxillary bone holding two central incisors, Fig. III. The clefts of the alveolar process united with a medium sized cleft of the hard and soft palate.

The mouth was fair as to cleanliness, the mucous membrane normal, and no visible gingivitis or pericementitis. There were occlusal cavities in the lower second deciduous molars, the tonsils normal, and no enlarged adenoids.

Patient was referred to Marquette University Oral Surgery Clinic, Trinity Hospital, April 2nd, 1918, and prepared to be operated on April 4th, 1918.

Urinary analysis: Normal. Blood: Normal.

Patient was admitted to operating room at 7:45 A. M., and put under ether anesthesia.

Under the anesthetic further examination revealed that the protruding mass contained two centrals which were tipped lingually. In this case, the two lateral halves of the upper jaw were very well developed and held the following well-developed deciduous teeth, 5432 2345, the occlusion of these being in normal mesio-distal relation.

Fig. 2.—Palatal view showing the complete cleft.

The shifting of the protruding mass distally would not permit the closing of the alveolar cleft, for the mass in itself was too narrow to complete the normal upper arch, and the anterior wall of the bone was found to be badly developed. The mass was ovoid in shape and stunted, evi-

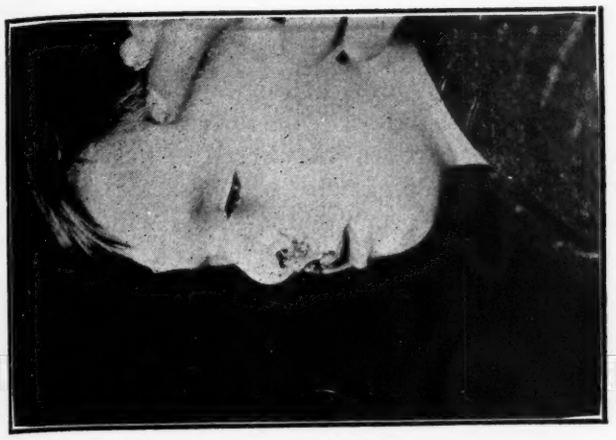

Fig. 6—(b) Side view under same conditions.

Fig. 6—(a) Front view showing result second day after operation with stitches still in place.

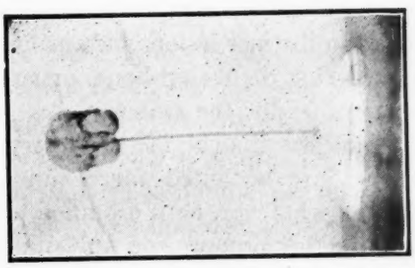

Fig. 5.

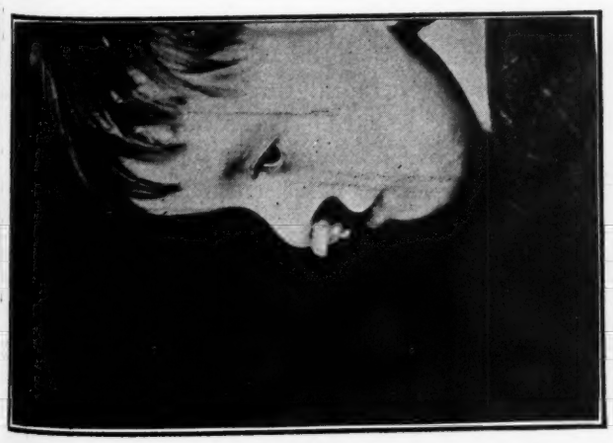

Fig. 3.—Side view showing prominence of the protruding osincisivum attached to the tip of the nose.

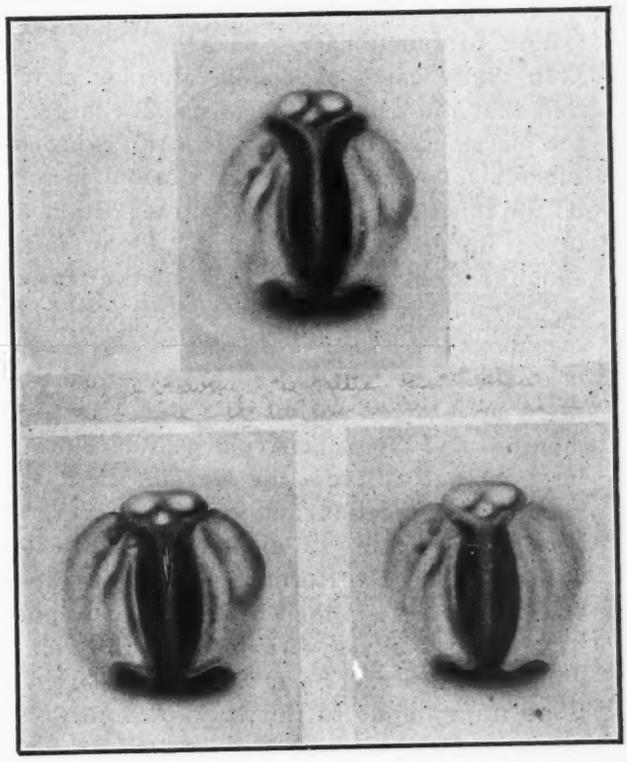

Fig. 4.—(a) A drawing of the palatal view to show the double cleft and protruding premaxillary. (b) Showing the vomer cut so that the premaxillary bone could be forced into its normal position. (c) Showing the premaxillary bone wired in its new position.

Fig. 7—(b) Side view under same conditions.

Fig. 7—(a) Front view 8 days after operation. Photographed immediately after stitches were removed.

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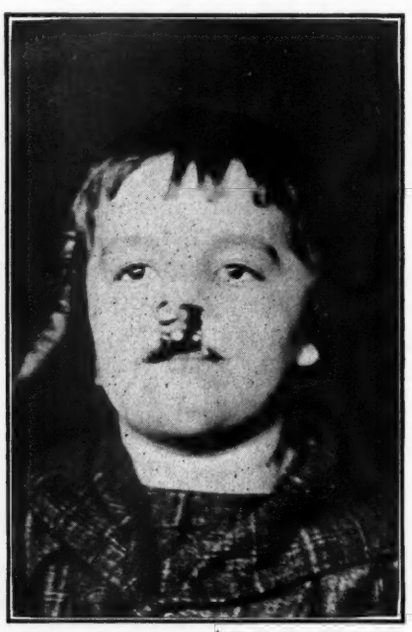

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Fig. 6—(b) Side view under same conditions.

Fig. 6—(a) Front view showing result second day after operation with stitches still in place.

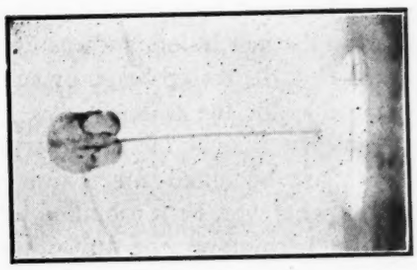

Fig. 5.

Fig. 3.—Side view showing prominence of the protruding osincisivum attached to the tip of the nose.

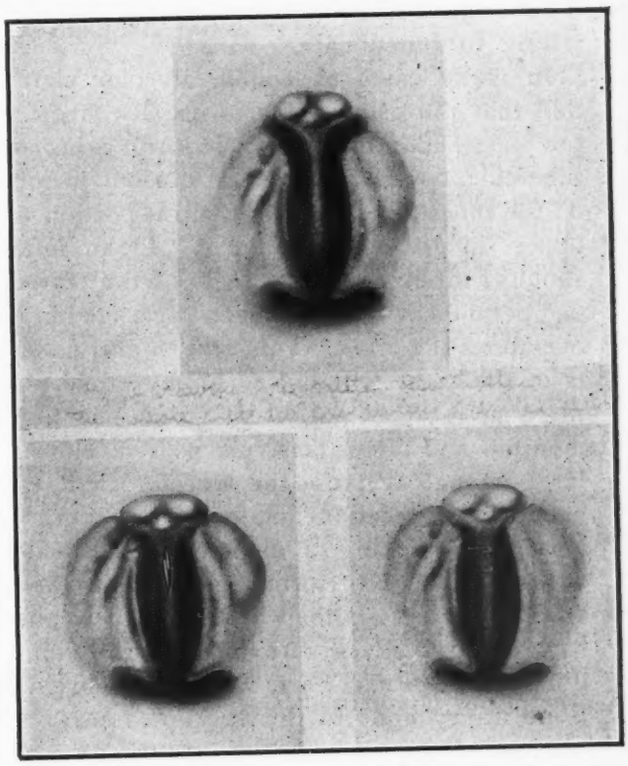

Fig. 4.—(a) A drawing of the palatal view to show the double cleft and protruding premaxillary. (b) Showing the vomer cut so that the premaxillary bone could be forced into its normal position. (c) Showing the premaxillary bone wired in its new position.

Fig. 7—(b) Side view under same conditions.

Fig. 7—(a) Front view 8 days after operation, Photographed immediately after stitches were removed.

dently due to the absence of lateral support and failure to functionate.

In many cases of double alveolar clefts we find that the osincisivum is usually larger than the mass herein described. It forms a projecting tubercule, covered by smooth mucous membrane on the inner side, with the central portion of the upper lip attached anteriorly. In an infant it should contain the tooth buds of the temporary and permanent central incisors, arranged in pairs, one above the other. This type of oral deformity is of the most pronounced kind, yet when operated upon at an early age (from one to three months) and the osincisivum well developed and large enough to close the alveolar cleft, I do a submucous resection and cut the vomer. This permits the forcing of the displaced osincisivum backward so as to form a satisfactory alveolar arch. The bone is then held in its new position by passing a silver wire through the vomer as illustrated in Fig. IV., a, b, c. In this way there is no injury done to the unerupted teeth. The borders of the alveolar cleft can then be cauterized several days later in order to get the tissues to unite in their new positions.

This, however, could not be done in this case since the osincisivum was undeveloped holding two centrals which were tipped lingually. Therefore, in view of the situation, Dr. A. Trigg, a prosthodontist, and I decided that it would be good surgery and far more practical to remove the protruding mass and prepare the vomer bone to act as a good stump for the artificial restoration of two central incisors. This was done under the following technic.

The muco-periosteal flap on the labial and lingual surfaces was dissected and the mass, containing the two deciduous centrals and the tooth buds of the permanent centrals, was removed, Fig. V. The flaps of the soft tissues were then brought in contact and stitched on to the lateral halves of the jaw bone so as to close the anterior portion of the floor of the nose. There remained only the cleft of the hard and soft palate. Following this operation, the double cleft of the lip was closed by bringing in contact the soft tissues which covered the protruding mass and the borders of the lip on each side. The vermilion surfaces were carefully joined and the alae of the nose were turned inward so as to give the boy the proper shaped nostrils. Paraffin silk was used to suture the soft tissues, Fig. VI, a, b.

The wound was kept clean by gently washing it with boracic acid solution.

On the eighth day the stitches were removed, Fig. VII, a, b, and the lad was then able to function his lip normally.

In about six months or longer the cleft of the hard and soft palate will be closed. In order to keep the space open between the laterals, an orthodontic retaining wire will be fitted and adjusted so as to promote the space which, at a later date, can be restored with a well-fitted anchor denture holding two centrals.

PRACTICAL CONSIDERATION OF CEREBRAL DECOMPRESSION.*

AUGUST SCHACHNER, M.D., F.A.C.S.,
LOUISVILLE, KENTUCKY.

For practical purposes the cases requiring cerebral decompression fall into two major classes.

First class, including all conditions which slowly but progressively encroach upon the intracranial space, such as cerebral tumors alone, or cerebral tumors plus internal hydrocephalus through occlusion of the Sylvian aqueduct, or external hydrocephalus occasioned by diminished absorption through the subarachnoid space.

Second class, in which there is a rapid and progressive encroachment upon the intracranial space plus destructive lesions to some parts of the brain, the causative factor in this class being trauma.

In passing, we might mention a third class, namely, certain types of epileptics. By the epileptics we mean the idiopathic type, i. e., those in which there is an absence of a distinct lesion, such as cyst, adhesions, organized clot, depressed bone, or some other evidence responsible for the epilepsy.

It is a well-known clinical fact that certain idiopathic epileptics are benefited for a time at least by any operation whatever, be it a bunion operation, a circumcision, a herniotomy, or any other operation that by no logical reasoning can be associated with the improvement in the epileptic attacks.

There is a type of idiopathic epilepsy in which the seizures are preceded for from six to twelve hours by a gradually rising blood pressure and possibly an increasing cerebral turgescence, terminating in an epileptic seizure. These cases are benefited by the Kocher decompression operation, and are the only idiopathic cases entitled to surgical consideration.

The Kocher operation is more than a large trephine opening; its aim is to permanently supply a safety valve for the relief or modification of the cerebral turgescence, the climax of which is represented in the epileptic seizure.

*Read before the Louisville Medical Club, April 5th, 1918.

In the application of decompressive measures in cases of the first class, the aim should be to afford the greatest relief possible from the increasing intracranial tension with the least interference with the nerve tracts.

The indifferent observance of the foregoing is largely answerable for some of the failures, partial or complete, that attend decompressive efforts.

Since some cases demand a single decompression, with or without a tapping of the lateral ventricles, and others a double decompression with or without ventricular interference,—or where the growth is subtentorial, an occipital decompression instead of a subtemporal,—a certain knowledge of the location and nature of the tumor is necessary for the proper application of decompressive measures.

Nor should the decompression be deferred until the papilledema has reached an advanced stage. The eyes not only may require several examinations, but, according to de Schweinitz, should include a careful estimation of the visual field, the color perception, the light sense, and the size of the blind spot.

According to Elsberg, "except in cases of direct pressure upon the optic nerves or optic tracts without papilledema, I have never seen a patient blind for twenty-four hours recover sight, even with the rapid subsidence of the papilledema. The hope that some vision can be restored by a decompressive operation (or the actual removal of a tumor) is in my experience vain. In double choked disc the danger signals are fleeting attacks of blindness lasting perhaps only a few minutes at a time."

In the second class where the progression of symptoms is more rapid and the underlying trauma has frequently occasioned lesions in the brain, it requires a careful study of the case to correctly interpret the rapidly changing conditions.

Cushing's investigations have thrown light upon these changing conditions, namely, when the intracranial pressure is rapidly increased, there occurs a stasis followed by anemia that becomes general and effects the medullary centers. This anemia acts as a stimulus to the vagus center, and through this the pulse rate is lowered, and the vasomotor centers, through which the blood pressure is raised. Through this increase of the blood pressure the cerebral anemia is overcome,—if temporarily the intracranial tension again increases, which again produces the anemia, and which in turn again raises the blood pressure through the stimulation of the vagus and vasomotor centers. This process repeats itself until there results an exhaustion of the vagus and vasomotor centers. Then we have the pulse changing from a slow and full pulse to a fast and soft pulse, and when this occurs it marks the beginning of the end. So long as the blood pressure remains in excess of the intracranial tension, the case is safe; but when the intracranial tension equalizes the blood pressure, the compensation will begin to break and then a fatal termination rapidly ensues.

Different explanations of the increasing intracranial tension have been offered, namely, localized stasis with transudation in surrounding areas; this process increases and spreads until the bulbar centers are involved (Hill and Bergman). According to Cannon, it is due to edema. Courtney attributes it to paralysis of the vasomotor centers from trauma, the paralysis resulting in a dilation of the vessels, stasis, thrombosis, and transudation.

It is generally agreed, however, that cranial injuries are commonly attended with increasing intracranial tension that may result in the compression of the blood vessels, terminating in anemia and death.

In recognition of these cases of head injury requiring decompressive measures involves frequent examinations directed especially toward the eye, the gradual rise in the blood pressure and the gradual and progressive decrease in the pulse rate.

A gradual and progressive rise in the blood pressure and a gradual and progressive decrease in the pulse in head injuries call for a subtemporal decompression, single or double, even though the eye does not offer evidences of a papilledema. Congestion of the retinal vessels and slight pinkish color of the discs are common attendants of head injuries and in themselves do not call for a decompression unless the changes are progressive.

Proper decompression in carefully selected cases not only affords the greatest measure of success, so far as recovery is concerned, but safeguards to a considerable extent the patient against subsequent neuroses common to head injuries.

SEPTIC WOUNDS.

If the conditions in a septic wound were the same as in a culture tube, surgeons would give up controversies and bury differences of opinions as to the claims for the highest efficiency of each of the many antiseptics and leave it to the laboratory worker to decide once for all which is the most efficient antiseptic; but the destruction of bacteria in a culture tube is a much easier and simpler matter than the destruction of bacteria when lodged in the living tissues or mixed in their débris. Almost all antiseptics have no selective, specific, or stronger action on the bacteria than on the living cells and tissues in which the bacteria are embedded. If they destroy the life of the bacteria, they destroy also the life of the cell. They are fixed by protein material, and apart from their action as a germicide we have also to consider their toxicity, solubility, absorption, and penetration when applied as a wash or dressing to wounds.—J. SALIBA, M. D., *in The New York Medical Journal.*

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WALTER M. BRICKNER, M.D., F.A.C.S., Editor

NEW YORK, AUGUST, 1918.

COMMON SENSE AND WAR SURGERY.

The following letter published in *The Military Surgeon* of May 1918 is such a splendid combination of wit and critique that we deem this publication a matter of unusual interest.

"In the first place I find that surgeons are somewhat in doubt and confusion regarding the whole question of the chlorine antiseptics. No one can believe in dichloramine who does not believe in the Carrel treatment, and no one can believe in any of the chlorine compounds who does not believe that Labarraque's solution was a good solution. Perhaps you will pardon me if I express my views on this subject and find it necessary to carry you back over what is undoubtedly to you a well-trodden pathway. Early in the war, the question of wound antisepsis arose and Lorraine Smith and Dakin, working independently of each other, came to the conclusion that chlorine was the most beneficial of the agents which they had tried. They then proceeded to study Labarraque's solution and found that this old, clinically proven antiseptic suffered from a chemical fault. It was alkaline, becoming increasingly alkaline as the chlorine was set free, and burned the normal skin. They each corrected this chemical fault by chemical means, namely, the addition of buffer salts; and these watery solutions, with chlorine as the active agent, achieved a great place for themselves and are probably in most general use today. Now, these aqueous solutions suffer from another chemical fault which surgeons do not understand and will not learn. This fault is that the chlorine is given off explosively, so that within ten minutes after dressing the wound with Eusol or Dakin's hyper-chlorite solution, no more free chlorine can be detected.

It is manifest that this chemical fault can be corrected in either of two ways, mechanically, i. e., by adding the solution as often as necessary, or chemically, by putting it under such chemical conditions that the chlorine will be given off slowly as needed. Carrel undertook the mechanical correction and undoubtedly succeeded, but surgeons refuse to understand that in the Carrel method you must use either constant installation, or intermittent, at periods of not over two hours. Even today one will see surgeons putting on a wet Eusol dressing and sending patients on a 36-hour trip to England with no opportunity for a change of dressing. That these cases arrive violently septic should not surprise one, and they do it every day.

Dakin has been working to overcome this chemical fault by chemical means. His first effort was to find out the active antiseptic agent, and his work lead to the conclusion that it is not the free chlorine but the combination which is effected between the chlorine and the nitrogen of the tissues in other words, chloramine. So he endeavored to obtain a solution of chloramine, and the first result of this was "chloramine-T," an excellent antiseptic; but it suffers also from the fact that it is too explosive or, in other words, does not have the necessary depot action. The chemical fault of effervescence is not yet corrected. His further efforts gave us "dichloramine-T" which is only soluable to any amount in the essential oils (hence eucalyptol as a solvent), and then, to prevent the chlorine from being given off too rapidly, he added paraffin oil which acts chemically as a reservoir from which the chlorine is given off over a long period. This solution suffers from the fault of chemical instability, making it necessary to ship the remedy in three separate packages which, in these circumstances constitutes a difficult problem, because the base depots did not recognize the importance of keeping the three together. In consequence we hear of dichloramine having been tried and found wanting, because some tried it in water in which it did not dissolve very well, and some applied the dry crystals, they having received only one constituent of the triune group. So Dakin has been working to find a solvent and chemical protector in one, and this he calls chlorcosane. The surgical world seeing this strange word and jumping to the

conclusion that it must be something new, puts it into the category with acriflavine, brilliant green, mercurophen and other new things of which the surgeon says he has tried enough; he will stick to that which he knows. Yet dichloramine-T and chlorcosane, after all are nothing but Labarraque's solution refined, concentrated and purified and absolutely nothing new surgically.

The question of wound treatment is becoming more and more hopeless. The fundamental difficulty is that surgeons are not talking about the same thing. They fail to distinguish between wounds—between early infections, fully devoloped infections and late infections. Yet it is certain that the whole question of asepsis or antisepsis, and even perhaps the choice of the antiseptic, will depend upon the nature of the wound and especially upon the stage of the infection. We hear now constantly the statement that it makes no difference whether there are any bacteria in the wound or not, it can be closed just the same, meaning secondary suture. If they would only qualify this statement and say that an early wound, within 12 hours at the most, before there is any extensive growth of bacteria, can be closed without an antiseptic, if mechanically cleansed, even though there are undoubtedly some bacteria left, well and good; but when they apply this thought to wounds that develop sepsis and lymphangitis (and all infections are a lymphangitis, whether in the tissues or the joint cavities, the belly cavity or the chest, the organisms are always in the lymph spaces, unless it be that they have gotten into the blood stream, in which case the patient has passed from the hands of the surgeons into the hands of God) when they apply this thought to the kind of wounds we get here, 36 to 48 hours behind the lines, they are talking foolishness. Now they may say, these leaders, that they mean of course the first class of wounds only, but they are not saying so; and as leaders and teachers they should know by this time that their remarks will be taken literally. If it makes no difference whether there are bacteria in the wound or not, then we might just as well go back to the days when we stropped our scalpel on our bootleg. I presume we would get away with 80 per cent of the cases even then.

I hear constantly that the French are excising, sewing up immediately and curing 80 per cent of the cases; but I have not heard a single person yet who apparently has wondered what they are getting in the other 20 per cent. When you stop to think that from 40 to 60 per cent of our cases here, depending upon the nature of the convoys, are returned to convalescent camp, that is, are healed in three weeks time at the most, then this French record does not look quite so wonderful, especially when you consider further that the French are more successful than any other of the belligerents in saving their men and are probably therefore, though I have no statistics, more successful in that they have a larger proportion of slightly wounded men. These slightly wounded men are of the greater military importance, since the saving of time lost in hospital is equivalent to an increase of man power; but they are not the cases which possess the greater surgical interest nor from which lessons concerning wound treatment must be drawn.

Again, one hears that all the antiseptics should be thrown into the sea. I cannot comprehend such a sweeping statement, for there will be a considerable number of cases in which free excision cannot be carried out because of anatomical considerations. A case in point is the following: A patient came to us with, among other wounds, a wound of the thigh. The C. C. S. had said a piece of shrapnel had lodged against the femoral vessels but had not injured them. The patient died and autopsy revealed a septic thrombus of the femoral vein at the site of the wound, with pyemia, etc. Complete primary excision was manifestly impossible except hip joint amputation. There was no antiseptic available, apparently (perhaps they had all been thrown into the sea). Yet to my tottering reason such a case would be better with an antiseptic than without.

Your specific questions are hard for me to answer because we are in a base hospital and do not see a great deal of work in question. My personal opinion is that there is no great demand for the highest type of brain surgeon. Like every other branch of surgery of war, one does his best with what has been left, and the man of good general surgical training will or should do as well as the highly trained specialist sometimes perhaps better. How many head cases are encountered I do not know. From what I know of general physiology, I suspect that the greater number of men hit in the brain excite only a certain theological interest. The question of transfusion is no nearer settled than it ever has been. As best I can learn, they do transfusion and some cases recover and some die, just as with salt solution.

The treatment of shock is just exactly where it always has been with the little ray of hope that some good men are at work upon it. It is certainly not true that shock is due to acidosis. A little thought ought to convince anyone of any experience that this cannot be so, because the most severe aci-

dosis he ever encountered clinically—namely, in diabetes—never produced symptoms of shock. That acidosis is present is almost to be expected because the failure of the circulation results in a failure on the part of the lung to properly oxygenate the blood. A necessary and natural increase of the CO content and therefore, again naturally and logically, a diminution of the alkali reserve; and also the sodium bicarbonate infusions do no more good in practice than anything else. I should say that, as always, common sense and trust in God still remain the best treatment of shock.

The more I see of this game the more it seems to me that what is needed is not the training of a specialist but the training of the good, old-fashioned, common-sense general surgeon. Just think for a moment that on several occasions here our old friend,————, the neurologist, has had to turn to and dress wounds. He and I have both been glad under the circumstances, that we had dichloramine. The only difficulty with the Carrel method here is that it simply cannot be done. Suppose your reservoir is frozen solid during the night, how can you keep up continuous irrigation."

THE BIPP TREATMENT.

The treatment of wounds presents a fascination at the present time because of the large variety of methods which have been suggested. Numerous adherents press the claims of their specific methods for general utilization. The problems of warfare multiplied difficulties which were rarely found in civil practice. The early experiences during the war represented the serious trials of the methods of civil hospitals under military conditions and in consequence the end results were not satisfactory. Rutherford Morison in his recent book Bipp Treatment of War Wounds, while not claiming that his method represents the ideal, expresses the opinion that it is more nearly so than any other so far evolved.

He arrived at the following conclusion: "That if it is possible to get to the bottom of an infected wound so that it can be thoroughly cleansed mechanically, and suitable antiseptics be applied, the wound can be closed at once with interrupted sutures, always with impunity, and many times with the prospect of finding it healed when the dressing is removed for the first time at the end of three weeks." Acting upon this conclusion, he urges the Bipp method of treatment, though emphasizing the importance of the strictest surgical cleanliness in the operating theatres and surroundings, and the maintenance of an antiseptic and aseptic technic, insofar as may be possible. He cautions against dissecting out the wounds because of the dangers resulting if such a course be pursued by surgeons insufficiently trained as anatomists. While possibly an occasional death has been attributed to bismuth or iodoform poisoning, his experience would indicate that serious absorption is unlikely to occur if a satisfactory paste is employed and all excess is removed after thorough rubbing into the wound surfaces.

From the principles which he lays down it is patent that he believes the Bipp Treatment is particularly successful under war conditions of rescue, transportation, and hasty operation, as a means of securing primary union after the suture of infected and suppurating wounds. Its main value apparently lies in the fact that, to quote his words, "It is so simple that a *clever* surgeon is unnecessary for the achievement of the best results, though a *careful* one is essential."

In all probability, there is a distinct field in military surgery for the Bipp Treatment, when the Carrel-Dakin technic is entirely unavailable. It is difficult to estimate the value of special treatments or to estimate their ultimate field of usefulness. The popularity of a method, however, while it may attest considerable interest in it, does not suffice to demonstrate its worth. While no unreasonable claims are made, further tests and corroborative reports are necessary before passing judgment as to its advantages, disadvantages, benefits, dangers, indications, contrary indications, and permanent value in surgical methodology—I. S. W.

WHY SHOULD THE SURGEON GENERAL APPEAL FOR MEDICAL OFFICERS?

Of the 146,000 doctors in the United States, it is a safe calculation that at least 70,000 of this number are within the age limit, from 21 to 55 years, and are physically and morally qualified to serve as Medical Reserve Corps officers.

Why, in view of this fact, the Surgeon General's office should should be hard put to secure a sufficient number of medical officers to supply immediate demands and to furnish a Reserve force of between forty and fifty thousand doctors is not quite comprehensible.

Every qualified physician, knowing how essential his services are to his country at this particular time, should consider it not only his duty, but a

privilege to take part in this glorious struggle for humanity and democracy.

This is the time when individual opinion must be sacrificed for the benefit of the whole and the time is near when every doctor must be in one or two classes; either a member of the Medical Reserve Corps, United States Army, or in the Volunteer Medical Service.

If you are between the age of 21 and 55 years, and there is a doubt in your own mind as to whether you are qualified or not, let the Surgeon General determine this matter by applying at once to your nearest Medical Examination Board for a commission in the Medical Reserve Corps.—MacD.

Surgical Sociology

Ira S. Wile, M.D., Department Editor.

Cancer and Economic Status.

The problems of cancer continue to challenge the interests of those seeking to conquer disease. Biology, chemistry, immunology, bacteriology, are supplying hosts of careful, scientific investigators aiming to wrest the secrets of cancer from secretive Nature. Thus far, information is regrettably negative in character. The main factors in our information concerning cancer are in the elements that we believe we know cannot stand tests of rationality. In groping for clues as to its idiology, statistical methods have been employed in every possible direction. Knight and Dublin presented before the Association of Life Insurance Medical Directors of America a suggestive paper on, "The Relation of Cancer to Economic Condition." The basis of their study was the mortality records established in their various insurance departments.

Information derived from the investigation of insurance statistics properly prepared is of inestimable value. Regardless of the effects of medical selection, the data thus made available is more nearly accurate than that secured from other channels. The chances of death at various ages form the basis of insurance procedures. The authors point out that they have studied their records for three large insurance groups, namely, the Ordinary, the Intermediate, and the Industrial, representing three distinct economic strata of the population. The holders of Ordinary insurance come from the most prosperous classes, while those possessing Industrial policies are representative of the great working population of America who pay for their insurance through weekly premiums of five cents or multiples thereof. The Intermediate group comprises a group of workers of wages above the average, thus enabling them to purchase their insurance in units of $500.

To quote their judgment, "The highest cancer mortality rates are found among the Industrial population, the least are to be observed among the Ordinary and the Intermediate department shows a cancer rate which is between that of the Ordinary and the Industrial. In terms of economic status we may say that the incidence of cancer would seem on its face to be most highly represented in the poorest groups of the population, that the rate decreases as we approach the more prosperous people, and that this is generally true of both sexes and at most of the age periods." Their conclusion merits attention particularly because it is contrary to the opinion generally prevailing in the literature of cancer. They point out, however, that the reason for their results lies in the careful analysis of the mortality rates at each age group in each branch of their insurance. They point out quite properly that much of the statistical material relating to cancer and economic condition is inconclusive because it is limited to a comparison of the proportion of cancer deaths among all deaths in particular departments of insurance. It is obvious that cancer might show the highest proportion of all deaths among prosperous policy holders owing to a decreased mortality from such conditions as tuberculosis, alcoholism, accidents and similar pathological conditions more prone to occur among the industrial population with lower standards of income. Under such circumstances of comparison the proportion of cancer to all causes merely measures relative importance without indicating its absolute or relative incidence.

While the statement that cancer is more likely to occur among those with low incomes must be accepted with due caution, the point appears to be well taken that earlier figures utilizing the proportionate method are technically inaccurate as measures of the relative occurrence of cancer at various ages and in different economic groups. Knight and Dublin present a table showing the cancer claims and claim rates per 100,000 mean in force. For males ages 25 and over, the rate

in the Ordinary department (composite mortality experience, 1914, 1915 and 1916—white lives) was 54.7; Intermediate, 54.9; Industrial, 140. Females, age 25 and over, 91.2, 87.0, 197.7 respectively. The differentiations are more marked when one considers a single age grouping during the main period of life when cancer is prone to attack. At the ages of 55 to 64, males, the rates were Ordinary, 275.2; Intermediate, 301.5, Industrial, 368.0. For females during the same age period, 318.5; 445.6. The authors point out that the smaller number of females exposed to risk in the Ordinary and Intermediate departments cause greater fluctuations in the figures of the various ages than are to be found among the males.

The effect of medical selection apparently is limited in their experience to the first two years, judging from a careful analysis of their figures in the Ordinary and Intermediate departments. Eliminating, therefore, for the sake of safety the first five years of issue in their Ordinary and Intermediate departments, and establishing comparisons with the cancer mortality in the Industrial department for all years of issue combined, because Industrial policy holders are merely inspected and do not undergo a complete examination, the figures are even more conclusive: Males 55 to 64 years old, Ordinary, 276.5; Intermediate, 295.1; Industrial, 368.0; Females, 353.6; 422.1; 429.6 respectively.

As a result of this interesting statistical investigation and analysis, there is reason to believe that the oft-quoted statement that a low cancer rate and poverty are correlated is probably without justification. If after further testing it is established as a fact that the incidence of cancer increases relatively and absolutely in the different age periods in inverse proportion to the degree of prosperity of a group, there will be another definite step in advance. Such a fact will direct the attention of investigators to specific causes more likely to be found among persons with lower vitality and diminished resistance as a result of their inability to achieve economic independence. While cancer probably never will be regarded as a disease of the poor, it is possible that its endemicity may be due to causes existent and kept alive by virtue of conditions, necessarily or unnecessarily, surrounding those living in a constant struggle with the elemental factors of existence in an unhygienic environment.

Book Reviews

The Spleen and Anemia. Experimental and Clinical Studies. RICHARD MILLS PEARCE, M. C., Sc. D. With the Assistance of EDWARD BELL KRUMBHAAR, M. D., PH. D., Assistant Professor of Research Medicine and CHARLES HARRISON FRAZIER, M. D. Sc. D. Professor of Clinical Surgery, University of Pennsylvania. 16 Illustrations, Color and Black and White. Philadelphia and London, J. B. LIPPINCOTT COMPANY. Price, $5.00.

The authors have presented a compilation of work most of which had been previously presented through the medical literature or had served as the basis of public lectures.

The book is divided into three sections. The first by Pearce describes his experimental studies which served as the substance of the Cartwright lectures during 1916. The second part by Krumbhaar consists of clinical observations on the classification and analysis of types of splenomegaly accompanied by anemia, together with diagnostic methods and forms of treatment other than splenectomy. Part three, by Frazier, comprises a succinct and careful presentation of the surgical treatment, splenectomy.

The page distribution is possibly unfortunate in that the theoretical and experimental material receives more than one-half of the attention, while the definitely practical subject matter has the rest. Inasmuch as the experimental work has served in a large measure as the basis for the practical treatment of affections of the spleen, a legitimate excuse may be offered for this arrangement.

As stated in the preface, splenectomy is considered, "first, as a means of studying experimentally in animals the relation of the spleen to blood destruction and regeneration and, second, as a therapeutic procedure in the treatment of diseases of man accompanied by anemia." The volume is not to be regarded as one devoted to a discussion of the injuries, infections and tumors of the spleen. It is a highly particularized monograph, excellently written, logically arranged, and thoughtfully presented.

Radiography and Radio-Therapeutics. ROBERT KNOX, M. D. (Edin.), M. R. C. S. (Eng.), L. R. C. P. (Lond.) Consulting radiologist, Great Northern Central Hospital, London; Hon. Radiographer, King's College Hospital, London; Director, Electrical and Radio-therapeutic Department, Cancer Hospital, London; Captain, R. A. M. C. (T.) 4th London General Hospital (in charge of *x*-Ray Department). *Part I, Radiograph.* With seventy-eight plates (one in color) and three hundred and thirty-seven illustrations in the text. New York: THE MACMILLAN COMPANY, London: A. & C. Black, Ltd. 1917. Pp. 382. Price, cloth, $9.00.

In Vol. I of the second edition of this book the author has considerably improved and amplified his already comprehensive work in the first edition. We believe this to be the best book on general roentgenology, written in the English language. In this new edition the author has added chapters on transportable field apparatuses, localization of foreign bodies, and general roentgenology incident to war surgery; all of special interest just now, due to war conditions.

A beginner in the practise of roentgenology will find in this book instructive data as to installation and technic, and quite a sufficient number of reproductions, with text, to help him in his diagnostic work. The advanced student will be more interested in the newer features mentioned above, about which very little has been published recently. We feel now, as we did before, that the chapter on diseases of the bone, could be made much more illuminating and instructive. Aside from this we consider this work an excellent one from the viewpoint of book making, typography and printing.

A Text-Book of Obstetrics. BARTON COOKE HIRST, M.D., Professor of Obstetrics in the University of Pennsylvania. *Eighth Edition.* Revised and reset. Octavo of 863 pages, with 715 illustrations, 38 of them in colors. Philadelphia and London. W. B. SAUNDERS, 1918. Cloth, $5.00 net.

Progress in obstetrics during the past five years has consisted particularly in the testing of various procedures aimed to increase the safety of women during pregnancy, labor and the peurperium. In the revision of his text-book, Hirst has included all the essential material for the guidance of medical students and general practioners. The revision is commendable particularly in the intelligent reduction in the number of pages whereby condensation has been effected without the sacrifice of vital facts.

Illustrations are reduced in number without losing any of the explanatory values that arise from illustration. The publisher's work is as usual, well done so that the book as a whole maintains the high standard of previous editions and continues its place among the foremost text-books on obstetrics written by American authors.

Plaies du Pied et du Cou-de-pied Par projectiles de Guerre. (War wounds of the foot and arch of the foot.) Par E. QUENU, membre de L'Academie des Sciences et de l'Academie de Medicine; professeur de clinique chirurgicale a la Faculté de Medicine de Paris; redacteur en chef de la Revue de Chirurgie. One large octavo volume of 464 pages with 477 figures and illustrations in the text. Paris: LIBRAIRE FELIX ALCAN, 1918

This is a very splendid monograph embracing in its discussions all of the war injuries of the foot and its arch which have been seen in the war, and is based on a very large experience. The text is profusely illustrated with diagrams, photographs and figures and many points are continuously illustrated with case reports. Much attention is given to the pathological anatomy. The late results, which with these lesions are very important, are gone into thoroughly.

The subject matter is discussed under the following heads: nomenclature and classification of injuries; pathological anatomy; evolution of the injuries and the clinical course; late results; late results after resection or partial amputation of the foot; general conclusions.

This volume should find its place on the shelf of every military surgeon and orthopedist.

Thyroid and Thymus. ANDRE CROTTI, M.D., F.A.C.S., LL.D., formerly Professor of Clinical Surgery and Associate Professor of Anatomy at Ohio State University College of Medicine; Member of the American Medical Association, Ohio State Medical Association, Columbus Academy of Medicine, American Association of Obstetricians and Gynecologists, Society for the Study of Internal Secretions, Honorary Member of the West Virginia State Medical Society, Surgeon to Grant and Children's Hospitals, Columbus, Ohio. With 96 illustrations and 33 plates in colors. LEE & FEBIGER, Philadelphia and New York, 1918. Price $10.

The artistic production of medical books is still sufficiently rare that commendation is due to the author and publisher of this work for its unusual beauty which appeals to the eye, as the subject matter attracts and holds the interest of the reader. No single volume contains a more valuable discussion of the thyroid and thymus glands and their diseases considered from the standpoint of anatomy, physiology, biology, pathology, operative technic, and constitutional effects.

Considering the general high standard of excellence in the discussion it is all the more remarkable that the psychic elements entering into thyroid disease are given such trifling and unsatisfactory consideration. The author apparently glosses over the facts of emotional disturbances as though they were subordinate to merit careful analysis, or else are too subtle to be interpreted in terms of physiological or anatomical relations. Possibly the fact that the surgical idea appears to be of paramount importance accounts for the failure to discuss fully this phase of Grave's Disease, except in general terms of nervousness. This criticism, however, does not militate against the general value and usefulness of this monograph, which because of its otherwise thorough presentation of the subject merits careful study by those appreciative of the importance of diseases of the thyroid and thymus glands. The intrinsic beauty of the volume will appeal to the bibliophile, but the merit of the volume lies in the wealth of material with well illustrated context. It is bound to enrich the mental acumen of the reader. The book deserves a place in the library of every thoughtful medical man.

Modern Operative Bone Surgery. With special reference to the treatment of fractures. By CHARLES GEORGE GEIGER, M.D. Octavo; 286 pages with 120 illustrations. Philadelphia: F. A. DAVIS COMPANY, 1918. Price $3.00 net.

This volume is "a comprehensive, yet abridged, book on plastic bone surgery." The opening chapters take up some general considerations, such as the histology of cartilage and bone and the functions of the periosteum, especially in a transplant, is emphasized. The evolution of the treatment of fractures is made clear and how it has lead to the use of the open operation and the employment of foreign and animal-tissue means of fixation. The instrumentarium needed and the steps of the operative technic are described and profusely illustrated. A portion of the book is devoted to the treatment of special fractures. The book is completed by considerations of the use of bone grafts and of plastic surgery in various deformities and diseased conditions of the bones.

Burns and Their Treatment. Including Dermatitis from High Explosives. J. M. H. MACLEOD, M. A., M. D., F. R. C. P. Physician for Diseases of the Skin, Charing Cross Hospital, Royal Flying Corps Hospitals, etc. London, HENRY FROWDE, HODDER & STOUGHTON. OXFORD UNIVERSITY PRESS, 20, Warwick Square, E. C. 4. 1918. Price, $2.00.

War has been responsible for an increase in surgical conditions due to burns, wherefore it is fitting to have a single little volume devoted to a discussion of burns and their treatment. The author has supplied a concisely written little volume discussing burns from heat, electricity, lightning, X-Rays, radium, corrosives, and high explosives. The author particularly favors the open method of healing, under a natural scab and regards methods of moist treatment inferior, while the paraffine method is held to be somewhat undesirable because of the offensive odors which may arise under the dressings utilized in this method. The illustrations and bibliographies under each subject add greatly to the value of this up-to-date, practical, pocket edition, war primer on burns.

The Treatment of Syphilis. A critical review by T. W. HARRISON, M.D., Ch.B., R.A.M.C., Lecturer in Venereal Diseases and Officer-in-Charge Military Hospital, Rochester. Reprinted from the Quarterly Journal of Medicine. Octavo, 74 pages. *Oxford University Press,* Humphrey Milford, 1917. $1.00.

This monograph represents an excellent combination of a vast personal experience and a wide acquaintance with the best literature. The author concerns himself only with the general treatment of syphilis, and discusses the rationale, effects, complications and methods in the use of the various compounds of arsenic, mercury and iodides. Of special interest are his remarks on the complications of Salvarsan injections. He is a profound believer in the employment of hypodermic injections of adrenalin both as an alleviant and prophylactic against such complications. Harrison's method of employment of Salvarsan and mercury does not differ radically from the conventional methods; he believes in the combined use of both drugs and in the necessity of courses of injections of Salvarsan, which are repeated according to the state of the Wasserman reaction. It is interesting to note, in connection with a recent controversy, that Harrison is sceptical in regard to the value of intraspinal treatment.

Progress in Surgery

A Résumé of Recent Literature.

Gastric Hemorrhage. FRANK SMITHIES, *Medicine and Surgery,* February. 1918.

Gastric hemorrhage is associated with the following conditions: in all primary gastric diseases; in conjunction with chronic disease of the heart, or blood-vessels; with complicating chronic disease of the liver or gall-bladder or ducts; with splenic disease associated with enlargement; with acute and chronic pancreatitis; with toxemias associated with ailments of the kidneys, central nervous system, thyroid, adrenal or hemolymph nodes; with bacteremias; with chemical poisons; after local injury; disordered blood states (hemophilia); associated with the physiological cycles of females; following intraperitoneal operations.

Inflammatory Tumors of the Abdomen. PATRICK I. NIXON, *Annals of Surgery,* March, 1918.

Inflammatory tumors in the abdomen may gather around some lesion, such as a gastric ulcer, or around some foreign body. They need not be due to some specific agent as tuberculosis or syphilis. When in the abdominal wall they resemble desmoid tumors. The diagnosis is frequently not made. Surgery is contraindicated.

Splenectomy in Splenomegalies. AUGUST J. P. PACINI, *Annals of Surgery,* March, 1918.

Splenectomy is indicated in Banti's disease, especially in its early stages, in Griesinger's disease, in Minkowski-Chauffard and Hayem-Widal jaundice, in primary splenic tuberculosis, in hereditary splenic syphilis (after medication fails), and in malaria with splenomegaly.

Splenectomy is of questionable value in splenic infantile anemia, in pernicious splenomegalic anemias, in Gaucher's disease.

Splenectomy is contraindicated in leukemia or pseudo-leukemia and for the splenomegaly of kala-azar.

Obstructive (Malignant) Jaundice. JOHN F. ERDMANN, *Annals of Surgery,* March, 1918.

Operation is done because (1) one may be mistaken in the diagnosis, and (2) for palliative purposes. The latter include (1) relief of pain due to back pressure; (2) the relief of an intractable form of pruritus; (3) social or business reasons; (4) surgical euthanasia. For palliative purposes the best operation is cholecysto-gastrosstomy.

Bile Peritonitis Without Evident Perforation of the Biliary Tract. J. J. BUCHANAN, Surgery, Gyneclogy *and Obstetrics,* March, 1918.

There is no typical disease picture to account for a bile peritonitis of the biliary tract without perforation. There is a group of recorded cases with abundant effusion in which no perforation could be demonstrated at operation or autopsy. These cases may be accounted for in a variety of ways, some fitting one hypothesis and some another, no one theory suiting all cases.

The bilious nature of the effusion still lacks the proof of a chemical examination. It is to be hoped that subsequent cases may be subjected to the test for bile acids and bile salts.

Up to the present the diagnosis has never been made. The treatment should be dry mopping of the peritoneal cavity with drainage to the common duct.

Tuberculosis of the Cecum. JOHN W. SLUSS, *Journal of the Indiana State Medical Association,* March, 1918.

Tuberculosis of the cecum is practically a primary affection and may be diagnosed in its early stages. In its later stages it may be mistaken for a suppurative appendicitis or for a carcinoma. The pathology includes ulceration of the mucosa; hyperplasia of all the coats and especially of the peritoneum; and a terminal cicatrization with stenosis. Excision offers an excellent prognosis in the early stages.

The Cholesterol Content of the Blood in Gall-Stone Disease. STANLEY P. REIMANN and J. A. H. MAGOUN, *Surgery, Gynecology and Obstetrics,* March, 1918.

Cholesterol determinations in the blood of 60 patients with histories relating to upper abdominal lesions were made and their subsequent operative findings correlated. Certain correlated and parallel conditions were also considered. A hypercholesterinemia is not constantly present in cholelithiasis. Many conditions may affect the quantity of cholesterol in the blood. Therefore a hypercholesterinemia has no significance in the differential diagnosis of cholelithiasis.

Pneumococcus Peritonitis. PARKER SYMS. *Annals of Surgery,* March, 1918.

Pneumococcus peritonitis occurs as (1) an idiopathic disease, as (2) as a sequel to some previous site of infection, or as (3) part of a general septicemia in which other organs are simultaneously involved. The varieties found are (1) a diffuse general peritonitis, and (2) an encysted or localized process. The disease in three times as common up to the fifteenth year and is more frequent in girls than in boys. The generalized form is characterized by an initial toxemia which is usually marked, a second stage of abdominal symptoms, and a third stage of continuing and advancing peritonitis. When loculation takes place the abdomen is irregularly enlarged, and if perforation occur (frequently through the umbilicus) there is a discharge of characteristic pus. Serum therapy is advised.

Some Conditions of Artificial Stumps. E. MUIRHEAD LITTLE. *American Journal of Orthopedic Surgery.* April, 1918.

A good stump is characterized by a sufficient covering for the bone, sound healing, consolidation, painlessness, and freedom of movement. The fitting of an artificial limb is delayed by sinuses, painful nerves or tenderness due to inflammation of the bone, unsound scars, and contracture in the neighborhood of the joint immediately above the amputation.

The stump should be as long as circumstances permit. Exarticulations are bad because the articular end is too bulky and the flaps necessary to cover it must be large and are often difficult to get. A section through cancellous bone gives the best result.

The greatest difficulty occurs with the lower limb. A suitable appliance has been invented which gives to hip exarticulations a better functional result than to amputations through the upper third of the femur. The ideal location is between the middle and lower third of the femur or just above the condyles. Amputations through the knee joint are seldom satisfactory. Four inches below the knee is the point of election for amputations of the leg. Syme's amputation between the middle and lower third of the leg gives the best result. Chopart's amputation is apt to be followed by an equinus deformity. Pirogoff's amputation yielded bad results.

Regeneration of Bone. ALBERT A. BERG and WILLIAM THALHIMER, *Annals of Surgery,* March, 1918.

Periosteum devoid of adherent cells, when transplanted into foreign tissues, produces bone. Endosteum and osteoblasts lining the Haversian canals in bone transplants produce bone very actively. The cambium layer when adherent to transplanted cortex produces bone. Some bone cells in the transplants are able to persist for almost a year but most of the bone is absorbed. Fully developed adult bone cells, although they remain alive for a considerable time, do not reproduce themselves and form bone. Very young lacunar cells (frequently erroneously called bone cells) can reproduce themselves and form bone. Transplanted bone is absorbed not only by osteoclasts but also by a direct action (biochemical?) of growing bone and the transplanted bone is replaced either by a creeping forward of the new bone or a gradual extension of the new bone into the transplant. Marr spaces and hematopoetic marrow are formed in the bone which develops from transplanted periosteum. Bone, when growing into cartilage, reproduces the normal enchrondral development of bone.

Is Early Operation Indicated in Fractures of the Spine With Cord Symptoms? A. S. TAYLOR, New York, *New York Medical Journal,* March 30, 1918.

Taylor's experiences have led him to believe that it is unwise to operate such cases early, that is, within the first week. His reasons are the following: 1. The high mortality attending such early operations. 2. The dangerous handling necessary incident to the operation. 3. Because of the increase of false motion likely to follow removal of the arches and ligaments. 4. Because of the impracticability of fixation of the spine by external apparatus. Operation should be deferred until the vertebral bodies are solid enough to stand handling, and only then when improvement is slow or should cease too soon.

A New Procedure for Compensatory Shortening of the Unaffected Femur in Cases of Considerable Asymmetry of the Lower Limbs. JACQUES CALVE and MARCEL GALLAND. *American Journal of Orthopedic Surgery,* April, 1918.

The principle indications are shortening of the femur by more than 5 cm. after fracture or old congenital luxations and for coxalgia with shortening. The authors have three operative procedures for the correction of the deformity and they especially recommend the first: (1) "auto-pegging" in which, after division of the bone, a peg is fashioned from the cortex and inserted into the medullary canal of the other fragment; (2) the procedure of setting by tenon and mortise; (3) the procedure of direct dovetailing. This latter is the most difficult of the three. The results have been satisfactory although the authors believe that the time is still a little short for mature judgment.

Non-Union of War Fractures of the Mandible. P. C. COLE, *Lancet,* March 30, 1918.

Of 270 cases of fracture of the mandib, in 30 there was non-union. Of the 30, 12 were hopeless therapeutically. The fundamental principles underlying the treatment of these cases are two: 1. Restoration of the arch. 2. Maintenance of accurate occlusion. Perfect results were obtained by the author in 70% of his operated cases. The methods employed are the following: 1. Plating alone. 2. Plating with interposition of fragmented bone. 3. Wiring. This method is only applicable when there is little or no loss of substance. 3. Bone grafts. 4. Free autogenous graft. Ten cases were operated by this method. 5. Pedicled grafts. As far as we can understand Cole's description, a small portion of the anterior fragment containing periosteum fascia and muscle is departed so that it hangs by a pedicle; this is interposed between the fragments of tthe mandible and sewn in place. This method is highly regarded by Cole and afforded rapid and certain results.

Osseous Cysts and Giant Cell Sarcoma. EIVIND PLATOU, *Annals of Surgery,* March, 1918.

Ostitis fibrosa occurs most often in young individuals but may also be found in persons of fifty to sixty years. Trauma as an etiological factor appears in many cases. The course of the disease is chronic with comparatively slight symptoms, rheumatic pains and a slow bone swelling. The *x*-ray picture is often typical. The treatment is surgical, all diseased tissue must be carefully scraped out, and inside of the bone the cavity is found full of a brownish-red crumbling tumor mass. The disease is benign even when perforation of the cortex and periosteum has occurred.

Suturless Skin Sliding Method for the Radical Treatment of Lung Abscess and Chronic Osteomyelitis. EMIL G. BECK, *Surgery, Gynecology and Obstetrics,* March, 1918.

The methods of primary sterilization by means of aqueous flushings should be thoroughly tested to determine their effectiveness and applicability.

The excision of tissues, as now practised in the war hospitals, should be adhered to in order to prevent chronic suppurations.

When early sterilization is not obtainable and suppuration continues, bismuth injection treatment should be employed.

In the residue in which the bismuth is not effective, the cavities be obliterated by skin flaps after the method described by the author which, in his experience, has resulted in clearing up nearly all of the cases.

Urinary Extravasation. JOHN A. WOLFER. *Surgery, Gynecology and Obstetrics,* March, 1918.

Extravasation of clean urine may present few signs early and may not produce marked reaction for a period of time, up to two to four weeks, and then gradually destroy life by sepsis.

Urine in the presence of a stenosis of the urinary outlet is usually septic.

Many cases of urinary extravasation are caused by a rupture of the urethra due to an inflammatory process, which can be detected before perforation.

Urinary extravasation must be treated according to the condition of the urine. In clean urine cases, closure of the perforation with drainage in case of necrosis is the method of treatment. In septic urine cases suprapubic drainage with wide incisions in all infiltrated and oedematous areas, rest to the urethra, and subsequent careful dilatation of the strictures is the only safe method of treatment.

A Warning Against Operations for Varicocele on Applicants for Enlistment, Registrants for the Selective Draft, and Soldiers. JOSEPH COLT BLOODGOOD, *The Journal of the Tennessee State Medical Ass'n.,* April, 1918.

Bloodgood warns against performing this operation except in those in whom the vein is very large and incapacitating because the condition, as a rule, spontaneously disappears; because the patients are usually neurasthenics and the symptoms do not disappear after operation; because atrophy of the testicle may follow; and because hydrocele may follow and be more annoying than the original varicocele.

Infections of the Urinary Tract in Infants and Younger Children Due to the Bacillus Coli Communis. CHARLES A. SELLERS, *Journal of the Indiana State Medical Society,* March, 1918.

Acute pyelocystitis in children is frequently overlooked because of the neglect of the routine examination of the urine. It is more frequent in female children. The more probable route of infection is the blood stream; and it is probably aided by some factor which lowers the kidney resistance or which enhances the virulence of the bacteria. Acute pyelitis is probably never primary. The disease responds to alkaline treatment; urotropin and vaccines are most disappointing.

The Treatment of Chronic Cervial Catarrh. A. HEINEBERG, Philadelphia, *Therapeutic Gazette,* April 15, 1918.

Heineberg believes that one of the most important reasons why the treatment of cervical catarrh is unsatisfactory is the failure to fully reorganize the etiological and complicating factors. To help the practitioner, Heineberg makes a systematic classification of the various etiologies and outlines the treatment for each. The most resistant form is the uncomplicated cervical catarrh. Here topical applications are the best form of treatment, but Heineberg emphasizes the necessity of thoroughly cleansing the cervical canal of the tenacious mucus before the affixation is made. To accomplish this, the author washes out the canal with the following mucus-dissolving solution: Sod. Bicarbonate, Sod. Borate, Sod. Chloride, a gr. dissolved in 4 oz. water. Of this solution, 1 drachm is dissolved in a pint of water. If the internal is as patulous, the solution is applied with a cotton application. When the canal is clean, silver nitrate is employed, beginning with a 50% solution and gradually decreasing. If the cervix is large and baggy, boroglyceride tampous are also employed.

Gunshot Injuries of the Peripheral Nerves. LEO MAYER, *International Journal of Surgery,* March, 1918.

Lesions of the peripheral nerves complicate a large percentage of war wounds and frequently the immediate care should include proper splinting. Treatment should begin immediately because, if the paralyzed muscles are kept on the stretch, atrophy with muscle degeneration ensues. The splinting should bring the divided ends of the nerve close together. The paralyzed muscles should be kept in condition by massage, electricity, etc.

Primary nerve suture is seldom possible. Secondary suture is to be done as soon as possible when the symptoms are progressive. If the symptoms are regressive no operation is indicated. When the symptoms remain in statu quo it is better to wait until the wound heals.

The nerve may be partly or wholly divided, or bruised, or may contain a small hematoma or scar, or "concussion" is present without any nerve injury.

There are a number of methods of suturing a divided nerve. The author prefers a perineural stitch. When the gap is too large to be bridged by stretching, a transplant of some convenient sensory nerve may be interposed to make good the gap.

Depending on the character of the injury the number of successful results varies from 40 to 100 percent.

Harelip and Cleft Palate. G. B. NEW (Mayo Clinic). *Minnesota Medicine,* January, 1918.

New describes the procedure empolyed for this condition for many years at the Mayo Clinic.

The child is preferably operated at the age of three or four months. Several days before operation the child is fed with a spoon or dropper in order to accustom it to this manner of feeding. No attempt is made to close a cleft of the alveolar process, the lip is brought together over it; this holds also in the treatment of the premaxilla. To obtain a satisfactory cosmetic result, the nostril must be shaped to correspond with the normal side.

The best time for closing the palate is when the child is a year or a year and a half old, before it begins to talk; closure at a much later date may, however, give quite good results, especially if the lip has been approximated at the proper age, so that the alveolar process will have become approximated. The edge-to-edge approximation or the Langenbeck operation is the operation of choice. It is most important to preserve the main branches of the great palatine artery.

The Effect of Trauma Upon the Laryngeal Nerves. E. S. JUDD, G. B. NEW, and F. C. MANN, *Annals of Surgery,* March, 1918.

Section of the recurrent laryngeal nerve, or ligation with linen, chromic or plain catgut produces a complete paralysis which in all probability will be permanent. Stretching of nerve for a short time does not impair the function of the vocal cords; stretching for a longer time does. Pinching of the nerve with a hemostatic forcep produces a temporary paralysis; the length of time for restoration depends on the anatomical point caught. The time generally necessary varied between thirty and sixty days. Exploration of the nerve produces an effect which corresponds to the character and degree of the trauma.

The Modern Treatment of Empyema by Antiseptics. R. A. STONEY, Dublin, *British Medical Journal,* February 16, 1918.

1. Most if not all cases of empyema can be cured without resort to such mutilating and dangerous operations as thoracoplasty and pulmonary decortication, because it is not necessary to obliterate the pleural space, but merely to render its walls sterile, and this is possible by frequent washings with hypochlorite solutions.

2. Flushing of the pleural cavity with hypochlorite solution is not dangerous provided there is a free exit for the fluid, as by the use of a double drainage tube.

3. The earlier this treatment is instituted the sooner and more surely will a cure be obtained, as there will be less formation of granulation and scar tissue, and the organisms will not have had time to entrench themselves deeply in the tissues, and will therefore be more exposed to the action of the antiseptic.

4. The drainage should be free, and the opening should not be valvular; if a Carrel tube is used it should be introduced as far as possible into the pleural cavity through a large drainage tube, so that the fluid, starting at the most remote part of the septic space, passes down over its walls and escapes freely between the Carrel tube and the drainage tube.

5. The opening is most suitably made by removing one inch of the eighth rib in the scapular line, as this is the most dependent spot for practically all positions, and there is no fear of its closure by the rising diaphragm.

Treatment of Infected Wounds With Special Reference to the Carrel Method. W. C. BORDEN, *International Journal of Surgery,* March, 1918.

The greater number of infected wounds in which the organisms are accessible are susceptible of sterilization and when rendered sterile will heal more quickly, and may be united or grafted in the same way as fresh operative wounds. The Carrel-Dakin method, while not ideal, is workable and, being the best available, should be employed wherever there is an infected wound.

Les Aneurysmes Arterioso-Veineux en Chirurgie de Guerre. (Arterio-Venous Aneurysms in War Surgery.) EMILE FORGUE, *Revue de Chirurgie,* July-August, 1917.

There have been a greater number of these injuries in the present war which have been produced by missiles making a tangential wound of both artery and vein, or by perforating one and wounding the other. The aneurysm is saculated or cirsoid and ultimately causes disturbances; operation is done prophylactically. Occasionally, an operation can be done immediately and consists of exposing the area, clearing out the clots and suturing the openings in the vessels. The best time for deferred operation is at the end of the fourth week. The exact level is determined from the trajectory of the missile, the point of maximum swelling, or of maximum thrill and bruit.

The following methods have been found ineffectual: methods of coagulating the blood in the sac; ligature of the artery above; ligature of the artery above and below, except in selected locations.

Effectual methods include quadruple ligation of vein and artery; quadruple ligation with extirpation of the sac; conservative operations including (a) separation of the artery and vein, excision of the communicating sac and closure of the openings by suture, (b) ligation of the communicating path, (c) transvascular obliteration of the communicating opening, (d) sacrifice of the vein with retention of the artery, and (e) end-to-end suture after extirpation with or without transplantation of a segment.

The complications are secondary hemorrhage and gangrene. In successful cases, edema may develop when the lesion is in the lower limb.

Fascia Transplantation Into Lateral Defects of the Major Arteries. HAROLD NEUHOF, *Surgery, Gynecolo and Obstetrics,* March, 1918.

Fascia transplants are best because they are universally and easily obtained, and the technic of the operation is feasible in the hands of one not expert in blood vessel surgery. The results of the experiments of Neuhof indicate that these transplants fulfilled all the desired requirements. The outcome was good, practically, and poor, histologically. In the majority of the experiments the results were satisfactory.

Syphilis of the Heart and Aorta. BRYCE W. FONTAINE, *Southern Medical Journal,* April, 1918.

Syphilis of the aorta is seen as an elevated area which is well defined, pale gray, translucent. The section shows the same characteristics and in the media one can see opaque yellow streaks and patches running the length of the section. These may be conglomerated into patches. The disease is most frequent in young adults. The special symptoms include pain, dyspnea, and fever. The disease results in myocarditis, aortic insufficiency and aneurism.